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TO THE



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OF THE

HOUSE OF REPRESENTATIVES

FOR THE

FIRST SESSION OF THE FORTY-SEVENTH CONGRESS,

1881-'82.

IN 26 VOLUMES.



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Yellowstone National Park, annual report of the superintendent of the (vol. 2).....	10	1	1
pay of P. W. Norris as superintendent of.....	19	85	

FOURTH ANNUAL REPORT
OF
THE COMMISSIONERS
OF THE
DISTRICT OF COLUMBIA,
NOVEMBER 26, 1881.

DECEMBER 6, 1881.—Ordered to be printed.



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1881.

ANNUAL REPORT

OF THE

COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

OFFICE OF THE COMMISSIONERS
OF THE DISTRICT OF COLUMBIA,
Washington, November 26, 1881.

The PRESIDENT:

The Commissioners have the honor to submit their fourth annual report.

The receipts into the treasury of the District of Columbia from all sources for the year ending June 30, 1881, were as follows:

Balance on hand July 1, 1880, including trust and water funds.....	\$302,923 45
Taxes and revenues for general expenses	1,839,775 19
Appropriations by Congress for general expenses	1,813,701 79
	<hr/> 3,653,476 98
Water rents and taxes.....	140,331 59
Trust funds.....	26,414 17
Refunds to various appropriations.....	4,671 56
	<hr/> 171,417 32
Special appropriation by Congress—filling grounds south of Capitol..	20,000 00
	<hr/>
Total.....	4,147,817 75

The expenditures for the year ending June 30, 1881, under the various heads for which estimates are by law required to be made annually, amounted to \$3,547,351.90, viz:

Repairs to concrete pavements.....	\$51,847 56
Replacement of pavements.....	271,288 82
Repairing and macadamizing Seventh street road.....	14,955 50
Surveys of the District with reference to extension of streets and avenues.....	4,988 34
Construction of main and lateral sewers.....	115,391 75
Work on canal to deep water on river front.....	3,436 70
Cleaning tidal sewers.....	2,820 33
Permit work.....	20,405 09
Construction and repair of bridges.....	11,491 12
Washington Aqueduct.....	20,000 00
Charities, reformatories, &c.....	199,712 60
Interest and sinking fund.....	1,317,843 48
Public schools (current expenses).....	409,329 72
Erection of new school-buildings.....	117,981 91
Metropolitan police.....	307,050 28
Fire department.....	106,262 97
Health department.....	26,928 11
Police court.....	12,197 27
Purchase police court building.....	20,000 00
Lighting streets.....	123,458 37
Engineer's department.....	70,063 24
Other expenses, general and miscellaneous, including salaries and contingencies, judicial expenses, judgments, markets, removal of garbage, parking, sweeping and cleaning streets and avenues, cleaning alleys, repairs to pumps, condemnation of alleys, rent of District offices, printing, advertising, &c.....	319,898 74
	<hr/>
	3,547,351 90

4 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Water department.....	\$140,738 74	
Trust funds.....	29,071 63	
Filling grounds south of the Capitol.....	19,887 40	
		189,697 77
Balance on hand July 1, including trust and water funds		410,768 08
Total.....		4,147,817 75
Balance on hand July 1, 1881, as above stated, is:		
For general expenses.....		372,133 81
For water fund.....		30,113 92
For trust funds.....		8,520 35
Total balance.....		410,768 08

The above statement shows an increase in receipts from taxes and revenues applicable to general expenses, as compared with the preceding fiscal year, of \$219,645.17, and an increase of receipts from all sources of \$321,026.40. But it does not include \$60,087.31 of drawback certificates received during the year in payment of general taxes under the act of June 27, 1879.

ARREARS.

The report of the collector of taxes shows the amount of arrears on the 1st July, 1881, viz:

On real estate.....	\$996,374 89
On personal property.....	202,803 06

While this exhibit does not give evidence of any decrease in the amount of uncollected taxes as compared with the last fiscal year, it should be stated that the arrears for personal taxes are merely nominal, consisting chiefly of old balances which, from lapse of time and other circumstances, are not now collectible, but which the Commissioners are not authorized to remit or discharge. It is very desirable that some legal method should be provided by which, at stated periods, the books and accounts of the collector should be relieved of such items, and he be discharged from accountability therefor.

More effective legislation is needed, also, for the collection of taxes on real property, by which valid titles may be assured to purchasers at tax sales. The want of such assurance is the chief cause of delinquency in the payment of taxes on real estate.

ASSESSMENTS.

The numerous complaints which have been made of inequalities in the last assessment on real estate, made in 1878, and the great changes in value since that period, warrant the Commissioners in recommending a reassessment of all taxable property. While in some sections of the District this change may not be marked, in other sections the value of land has greatly advanced, and in general a material improvement is observable.

In this connection it is hoped that some more satisfactory method of taxation on personal property than that now in use may be devised. That the personal tax law now in force has not been successful as a revenue measure, experience has clearly demonstrated. Its tendency is to discourage business and honest returns of personal property for taxation; to enhance the local rates of interest on money; to encourage the investment of local or resident capital in non-taxable securities, and to give the control and profits of the local money market to non-resident capitalists. A law which thus discriminates against resident citizens,

and tends to repel the very class whom it should be our policy to attract to the capital, cannot be either wise or just.

Since our special report made to Congress on February 14 last, the collection and settlement of special assessments, as revised under acts June 19, 1878, and June 27, 1879, have steadily and satisfactorily progressed. There had been issued under said acts on October 10, 1881, drawback certificates to the amount of \$684,203.96; of which \$409,057.50 had been received in payment of special assessments, and \$250,222.17 had been received in payment of general taxes.

Leaving unredeemed.....	\$24,924 29
To be issued (estimated).....	39,914 07
Total	64,838 36

The amount of 8 per cent. certificates unredeemed on the 10th of October, 1881, was about \$521,300, leaving, with estimated interest, about \$706,000 to be redeemed; and the amount of uncollected assessments pledged for their redemption was, at same date, \$684,203.96. This last sum does not include interest, alley assessments, street railroad assessments now in litigation, nor assessments against the United States, amounting, as revised, to \$821,265. 4.

There were on October 10, outstanding in the hands of third parties about \$260,000 tax-lien certificates, issued by the late board of public works; and the amount of uncollected assessments applicable to their redemption was \$154,536.68, showing a deficiency of about \$105,000. This deficiency is the difference between the original assessment and the amount found due on revision under act of June 19, 1878. And as in most cases the holders of these liens refuse to accept the drawback certificates provided by said act to cover this deficiency, because they do not bear interest, no adequate provision exists for their settlement and adjustment.

The Commissioners, therefore, renew the recommendation contained in their special report of February 14, on this subject, that the unredeemed 8 per cent. certificates, and all unsettled tax-liens now in the hands of third parties, be funded in 3.65 bonds, or some other convenient form, and respectfully refer to the reasons given at large in said report for this recommendation. For more detailed information in relation to this and other subjects connected with the revision of assessments, reference is made to the report, hereto appended, of the officer in charge of said revision.

BONDED DEBT.

The Treasurer of the United States, *ex officio* Commissioner of the District sinking fund, reports the total bonded debt of the District of Columbia, on October 1 last, at \$21,896,450, which shows a reduction, since July 1, 1878, under the operation of the sinking fund, of \$210,100, notwithstanding the additional issue, under act of June 16, 1880, of \$719,800 of 3.65 bonds to fund the floating debt of the District. There has also been, since that date, a reduction in the annual interest charge of \$55,467.77; and the amount of \$70,600 of 3.65 bonds, representing the Washington school fund, has been canceled and destroyed, as directed by the District appropriation act of March 3, 1881.

With a view to the unification of the District debt, as suggested in our last annual report, we now recommend that the Treasurer of the United States be authorized to redeem, as speedily as may be practicable and advantageous, by the issue and sale of 3.65 bonds, all other outstanding bonds of the District. Such a consolidation at the present

market rates of its bonds would not, it is believed, very materially increase the aggregate of the bonded debt of the District, while it would probably result in a considerable reduction of the large annual appropriation now required for the uses of the sinking fund.

This appropriation, made to meet the requirements of a debt which, numbers and resources considered, is unparalleled in any other civilized community, and for which the tax-paying citizens of the District are not responsible, now absorbs more than one-third of the entire revenue of the District, including the Federal contribution of 50 per cent.; and it leaves the Commissioners without adequate means for the proper support of education, for the improvement and extension of streets and avenues, and for other indispensable works with which they are charged. Congress alone can supply the deficiency.

PUBLIC SCHOOLS.

Under authority of the fourth section of the act of March 3, 1881, making appropriations for the government of the District, the parcels of land therein described have been sold by the Chief of Engineers, United States Army, and the proceeds of the sale, amounting to the sum \$7,452, have been deposited in the Treasury for the erection of a high-school building in Washington.

Under authority of the act of March 3, 1879, granting to the District of Columbia for school purposes square No. 109, known as Holmead's Cemetery, and of appropriations made in pursuance of said act, the bodies interred in that cemetery have been removed to Rock Creek and other cemeteries; and this valuable property is now available for the uses to which it has been dedicated, whenever the Commissioners shall be authorized to dispose of the same.

The four new school-houses mentioned in our last annual report as in course of erection have been completed (except two rooms in one of the county buildings) at an aggregate cost, not including sites and furniture, of \$89,552.24. The two located in the second school district contain twelve rooms each, with an aggregate capacity for the accommodation of about 1,500 pupils, and are models of convenience, comfort, and the most approved school architecture. One of them is for colored pupils. The two in the county are plain but convenient and substantial brick buildings, and will accommodate about 400 pupils.

The five additional houses, including the high school, provided for in the appropriation for schools for the current fiscal year, are progressing satisfactorily, and will no doubt all be ready for use at the beginning of the next school year; thus adding, since 1878, eleven first-class buildings, including a spacious and commodious edifice for a boys' high school, to the accommodations of the public schools of the District of Columbia. But more are needed.

While this evidence of progress in the work of public education at the capital is a subject for congratulation, it is to be regretted that thus far it seems to have been regarded by Congress as a matter of merely local concern, and not as a subject, as it really is, of the highest national importance. While many millions have been lavished by the Federal legislature to foster education in the States and Territories, the burden of this high duty and responsibility at the national capital has been thrown upon the scanty and wholly inadequate resources of the people of this District. Is it unreasonable to ask and expect that the capital of the Union shall receive from Congress equal consideration with the States and Territories of the Union; and that its common schools, under

Federal care and nurture, shall be made convenient steps to the vestibule and halls of a great national university? This was the wise and patriotic counsel of Washington, and its value and obligation have already been acknowledged by the establishment of a National Bureau of Education.

The wisdom, culture, and worth of the Union may reasonably be supposed to be more fully represented at its capital than elsewhere; and the people of the Union, therefore, will naturally look to the capital for the highest types of their institutions, and the most perfect methods of national development and progress. It is not possible that the local resources of the District of Columbia can ever meet this popular demand; nor ought it to be expected.

For detailed information in regard to the public schools reference is made to the appended report of the board of school trustees.

WASHINGTON ASYLUM.

The south wing of the work-house, which is a part of the asylum, has been completed, making the total cost of the building \$37,063.52. In a few days the female convicts, now confined in the almshouse, will be removed to this wing, and the evil, heretofore the subject of just complaint, of keeping offenders against the law in contact with the honest poor, will be abated. Many other important improvements, as reported by the commissioner and intendant of the asylum, have been accomplished during the past year; and it is believed that this valuable institution has never been in a condition of equal efficiency and usefulness as at present. Much more, however, remains to be done, involving increased expenditure, to meet the increased demands for accommodation and for needed and indispensable reforms and improvements. We invite careful attention to the intelligent and practical suggestions of the intendant on this subject. He again recommends the purchase of a farm for the use of the asylum, and for the more profitable utilization of its unskilled laborers, in which the Commissioners heartily concur.

INDUSTRIAL HOME SCHOOL.

The new building, for the erection of which provision was made in the District appropriation bill for the current fiscal year, is nearly completed, and will be ready for occupancy before the 1st of January. During the past year, also, other minor improvements, including a conservatory, have been added. The new building will provide accommodation for about thirty additional inmates, and it is intended as an experiment of the cottage, or family, plan of administration adopted in other similar institutions. The economical management of this home for destitute and neglected children and youth of both sexes has enabled its public-spirited and self-sacrificing managers, at very small cost, to dispense lasting and wide-spread benefits to the helpless and unfortunate as well as to the public who indirectly share the beneficent results of their labors.

CHARITIES.

We again recommend the establishment of a board of charities, to whose supervision the management of all charitable, reformatory, and penal institutions, supported in whole or in part by the District of Columbia, as well as all expenditures of public money for the relief of the poor, may be committed. The reasons for this recommendation are

given at large in our last annual report, to which attention is invited. Such boards exist in many of the States and cities, and have, as we are informed, been attended by favorable results.

INSPECTOR OF BUILDINGS.

The inspector of buildings reports that permits have been issued during the year for building improvements of the estimated value of \$1,951,970, which embraces the sum of \$1,857,400 for new brick buildings whose character and value favorably compare with those of like structures erected during any preceding year.

The revenue to the District from fees for these permits was \$3,237.

The inspector includes in his report a statement of the damages to property in the city by the storm of June 27, 1881, which amounted in the aggregate to \$36,940, and accompanies the same with a map on which the course and extent of the storm are indicated. He also gives interesting data in connection with the erection of new school buildings, and the condition and needs of other public structures.

COLLECTOR OF TAXES.

The collector of taxes reports the collections during the year, and submits a detailed statement of his accounts. He again refers to the necessity for additional clerical force in his office to secure a satisfactory discharge of the duties devolving upon it.

ASSESSOR.

The assessor reports the transactions of his office during the year, including statements of receipts from taxes, &c., and the value of taxable real and personal property in the District.

In connection with the subject of personal tax, he states that the returns from intangible property are rapidly diminishing in consequence of investments being made in exempt securities, and asks attention to recommendations on the subject contained in his previous annual reports. He also recommends the employment of additional facilities for increasing the revenue from licenses.

ATTORNEY.

The attorney makes an extended report of the business of his office for the year, and transmits a list of judgments against the District for which provision should be made.

SALE OF PROPERTY.

Under sections 3 and 6 of the act of Congress making appropriation for the expenses of the government of the District of Columbia for the fiscal year ending June 30, 1882, the Commissioners were authorized to sell to the highest bidder at public auction, certain property belonging to the United States and District of Columbia, situated in the cities of Washington and Georgetown, and apply the proceeds of such sale to the purchase of a lot in Georgetown, and the erection of an engine-house thereon, and the erection of two police-station houses in the city of Washington.

The property named in sections referred to was offered for sale as

directed, except the fish wharf in Georgetown. The Commissioners thought it best to hold this property with the hope of commanding a better price. A fair valuation limit was placed on all the property authorized to be sold. Only two pieces of that offered reached a fair market price, viz, lot 3 in square 382, and a certain parcel of land in the square south of square 181, belonging to the United States. The amount received for the property in square 181 has been placed to the credit of the District of Columbia for the purposes named in the act.

The purchaser of the property in square 382 has not yet complied with the terms of sale; alleging as a reason for his non-compliance that there was no authority given in the act of Congress to the Commissioners to convey the said property.

The balance of the property was withdrawn for the reason stated, and will be offered again when a better market can be obtained.

POLICE DEPARTMENT.

The major and superintendent of police reports the operations of the force under his charge, and renews his recommendations for an increase of the same. The extraordinary extent of the territory embraced in the police jurisdiction, amounting to over seventy-two square miles, embracing the cities of Washington and Georgetown and all of the county of Washington, makes the duty to be performed by the very small number of men exceedingly arduous, and does not afford the protection demanded by the citizens. The major's appeal for an increase of men is just and well founded, and is strongly recommended to the attention of Congress.

The thorough discipline and effectiveness of the entire police department are worthy of all commendation.

FIRE DEPARTMENT.

The fire commissioners report upon the condition and needs of the department, and forward the reports of its subordinate officers for the year.

The high character of the fire department for discipline, efficiency, and untiring zeal, which has characterized it heretofore, is fully maintained. The small amount of loss by fire and the low rate of insurance upon property in the District furnish abundant evidence of the department's faithfulness in the discharge of duty. An additional company in the northeastern section of the city, as recommended by the fire commissioners, is much needed, and the favorable action of Congress is respectfully invited.

HEALTH DEPARTMENT.

The report of the health officer is very thorough and complete, giving in minute detail the working of this most important branch of the public service. The statistics and tables afford reliable evidence of the healthfulness of the District, and its freedom from epidemic diseases during the year.

The intelligent manner in which this department has been managed gives very general satisfaction, and a liberal feeling on the part of Congress will make it yet more efficient. The suggestions of the health officer should receive careful and thoughtful attention.

WATER DEPARTMENT.

The report of the water registrar shows that the number of persons using the Potomac water for domestic and miscellaneous purposes on the 30th of June, 1880, was 18,313. Of this number 664 have been connected during the year.

The receipts of the department, independent of the tax for laying water-mains, were \$113,338.80. The expenditures for all purposes, except for interest and sinking fund, were \$66,614.97. The amount due for interest and sinking fund for the ensuing year is \$42,230. Owing to arrears due to the sinking fund, the amount paid during the year on account of interest and sinking fund was \$74,123.77.

The debt of the water department, which was incurred for the purpose of laying the 36-inch main, is now \$389,000. The stock bears interest at 7 per cent., and cannot be called until maturity (October 1, 1901, and July 1, 1903).

For this unfavorable condition of the debt of the water department there appears to be no immediate remedy. Under a late decision of the District court, the fiscal year of the water department begins on the 1st of January. The Commissioners are of the opinion that it should be made by law to conform to the usage of the other departments of the District government.

The total length of water-mains in this District is 175.7 miles. Of this total 17.7 miles, consisting of 30, 12, 6, and 4 inch mains, were laid by the United States. The remainder, including the 36-inch main, have been laid by the corporation of Washington and the District of Columbia.

There are now in use in the District, for the service of the public, 816 hydrants and 464 wells. The water from these wells is constantly analyzed, and, when found impure, the wells are condemned and the pumps removed. While recognizing the necessity for wells in many parts of the city where the water-mains have not yet been extended, and also the fact that for the poor who cannot afford the luxury of ice, the well-water is cooler, and therefore more agreeable than that which flows from the public hydrants, the Commissioners are not disposed to extend the system unnecessarily, on account of the danger to the public health which is liable to result from the contamination of the water by sewage or by surface drainage.

The water registrar earnestly recommends that immediate steps be taken to increase the water supply. In common with the greater number of American cities, Washington is now suffering from a lack of a proper pressure to deliver water on the higher levels, and has reached that point where some decided legislation is necessary. The difficulty can be reached only by increasing the supply or by regulating and reducing the consumption by the use of meters. The sentiment in Congress has heretofore apparently been strongly in favor of increasing the supply, and a report by the District Committee of the Senate was made during the last session of Congress recommending the extension of the conduit and the completion of the dam at the Great Falls.

The conclusion of the Senate committee (see report No. 39, Forty-sixth Congress, second session) is stated by them in the following language:

The Government of the United States undertook this great work of bringing "to the cities of Washington and Georgetown an unfailing and abundant supply of good and wholesome water." It has, at its own expense, constructed the works and laid a large portion of the principal mains which supply the two cities. But to complete

the work, put it in condition for the government and people to reap the full benefit of this great work, additional expenditures must be made. Believing there should be no divided ownership, interest, or control, but that the government should have the complete and absolute ownership and control of the dam, conduit, reservoirs, and principal mains, the committee recommends—

That the expense of completing the dam, extending the conduit, and laying the connecting mains be paid by the United States; and that the authorities of the District be permitted as heretofore to lay such pipe as may be necessary to distribute the water to the people, and to erect such fountains as will supply the necessities of persons not able to have water brought into their houses.

The plan approved by the committee will undoubtedly afford a sufficient supply, and will deliver the greatest quantity of water at the highest practicable level. The Commissioners, however, are of the opinion that this increase of supply should be accompanied by a corresponding increase in reservoir capacity in order that the water may be delivered in a reasonable condition of purity for domestic use. As full information on all subjects connected with this question has been furnished to Congress heretofore, it is not necessary to enter into any detailed discussion of the question.

In this connection, and as illustrating other methods than those heretofore proposed, a study of the Rock Creek Valley has been made by Lieutenant Hoxie, assistant to the Engineer Commissioner, with reference to its availability as a reservoir and general park. While the scheme proposed is in every way practicable, yet it would prove more expensive than that heretofore recommended, by reason of the large expense of land condemnation and the incidental cost of proper roadways, bridges, and collectors. The board is therefore of the opinion that it should not be allowed to interfere with the immediate realization of the plans heretofore proposed, and which have received the approval of the committee of the Senate.

PARKING COMMISSION.

The parking commission report that they have planted during the year 2,134 trees upon the streets in addition to 536 which have been replanted to fill vacancies caused by storms, the rigorous weather of the last winter, accidents, and malicious injuries. They have thus increased the length of the streets which will ultimately be lined with handsome shade trees by about five miles. As the trees become larger more expense is required for their general care, but the results already obtained fully vindicate the methods adopted by the commission, and the policy of continuing the present annual expenditure.

SURVEYOR'S OFFICE.

The surveyor calls attention to the inadequate provision for this office and asks that it be established upon a more reasonable and equitable basis. Under existing laws the compensation of the surveyor is derived entirely from fees. The fact that the office is not a remunerative one would seem to be established by the resignation of the last incumbent. It is to the best interest of the city at large, and of individual property owners, that the compensation of this office should be so fixed as to secure and retain the services of a competent man.

PAVEMENTS.

The condition of the street pavements on the 1st of July last was as follows:

Concrete, including coal tar and asphalt, 44.92 miles; stone block, 16.18

12 . REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

miles; rough stone and cobble, 17.7 miles; macadam, 7.45 miles; gravel, 32.25 miles; wood, 16.7 miles; unimproved, 95 miles.

The Commissioners have continued the policy heretofore adopted by them, and approved by Congress, of replacing the wooden pavements by asphalt or stone, and during the past year have renewed 5.4 miles. On the 1st of July, 1878, there were 34 miles of wooden pavement in the city, all in a more or less decayed and dangerous condition. At the close of the fiscal year this will have been reduced to about ten miles, containing approximately 250,000 square yards; it will therefore require two years more to effect the renovation of these impassable streets and avenues.

The full details of the work performed and to be done will be found in the report of Lieutenant Greene, assistant to the Engineer Commissioner.

The operations of the year have been impeded and delayed by the combination of parties interested in the importation of crude asphalt. The Commissioners are of the opinion that no city can afford to place itself in the power of any corporation or combination of men, by laying upon its streets pavements of which the materials are not to be bought in the open market.

They have therefore taken such steps as are necessary to determine the facts in relation to the importation of asphalts by advertising for 1,500 tons of crude asphalt. If this cannot be purchased freely and in open market, it is their intention to abandon the use of asphaltic pavements.

SIDEWALKS.

As some complaint has been made in regard to the condition of the sidewalks of the city, it is proper to state that, in the absence of specific law, the Commissioners have been at a loss as to what policy to pursue. There are now about 260 miles of sidewalks which, under the municipal ordinance of 1853, would be kept in repair by the owners of adjoining property. The board is advised by the attorney that the ordinance cannot be enforced. The most of the pavement is of brick, and one-tenth in bad condition. To assume the entire expense of the footwalks of the city would involve an expenditure larger than can, at present, be borne by the general fund, especially in view of the large areas of rotten wood and rough stones in the heart of the city, which are yet to be removed.

There are now on file in the Commissioner's office 726 petitions for the improvement of various streets and avenues; covering nearly all of the cities of Washington and Georgetown. It is found on examination that the cost of the improvements so petitioned for, excluding the unsettled portions east of Lincoln Park, south of N street south, and between the white lot and the observatory grounds, will be \$2,582,562.65. It is apparent at once that the revenues of the District are not sufficient to complete the work for many years. All these improvements have, however, been estimated and scheduled for the information of Congress.

STEAM RAILWAYS.

In obedience to the resolution of Congress, the Commissioners have caused the subject of the steam railway lines within the city to be thoroughly examined, and detailed plans and estimates to be prepared of the cost of removing the railways from the surface of the streets; having in view a final settlement of the whole subject, which will at once provide for the exigencies of local and through traffic, and remove for-

ever all cause of complaint arising from the occupation and obstruction of the public highways.

The details of the plan proposed will be found in the report of Lieutenant Hoxie, assistant to the Engineer Commissioner.

The whole matter will be the subject of a special report to Congress.

THE RIVER FRONT.

In previous reports the Commissioners have repeatedly asked the attention of Congress to the condition of the river front of the city.

In the annual report of 1879, their views as to the proper method of conducting the reclamation of the marshes were given at length. It would appear that the time has arrived for action. The details of the proposed work have been carefully studied, and the conclusions arrived at can be presented without delay when called for by Congress.

TELEGRAPH LINES.

In the last annual report the Commissioners called attention to the obstructions caused on the streets by the large number of unsightly telegraph poles; they also submitted data showing the large extent of underground wires now in European cities and the perfect feasibility of that system; and they asked that the rights and duties of the telegraph companies in this respect should be defined by law. No legal action has as yet been taken in the matter, but the Commissioners have taken the responsibility of refusing to grant permits to new companies to erect poles in the more important streets of the city, and have granted these companies the option of laying their wires underground. Under this, the Mutual Union Telegraph Company has laid its wires in pipes underground on New York avenue, from Twelfth to Fifteenth street, and on First street and New Jersey avenue from I street to the Capitol, the total length of the two underground lines being about one mile. The opposition to further extension of telegraph lines on poles which has lately developed in various cities has caused the production of a number of patented systems for carrying wires underground. The Commissioners do not feel obliged to enter into the question of the merits of these various patents as against the system long in use in Europe; but they have no doubt of the perfect feasibility of carrying the wires underground. They therefore renew their recommendation that a law be passed compelling the removal of all telegraph poles in the city within a reasonable time.

SURVEYS.

The surveys of the District with reference to the extension of streets and avenues have been continued during the year. The triangulation has been completed and the topography carried over an area of eight square miles. The area remaining adjacent to the city, and for which maps are now urgently needed, embraces about thirty-five square miles.

The object of the survey is to obtain accurate maps of a scale sufficiently large to make proper plans for the extension of the streets and avenues in the rapidly growing portions of the county, just north of the city. The streets hitherto laid out in that section do not conform to each other or to the general plan of the city, and an alteration in their lines will be demanded as soon as they are thickly built upon. It is very important that this error should be avoided in streets to be laid out hereafter.

SEWERS.

The New York avenue intercepting sewer has been completed, and performs its work satisfactorily. The records of the year sustain the accuracy of the calculations upon which the sewer was designed.

Work on the Boundary intercepting sewer has progressed more slowly than was desired on account of difficulties encountered in the lower section from subterranean springs and caving banks. That difficulty has been overcome, and the work is now advancing satisfactorily. It is proposed to begin the work for the relief of the northwestern section of the city by constructing an additional sewer at the head of Slash Run district, and an estimate for this purpose has been presented.

Very respectfully,

J. DENT,
THOS. P. MORGAN,
W. J. TWINING, *Major of Engineers,*
Commissioners District of Columbia.

A.—REPORT OF THE SECRETARY.

OFFICE OF THE COMMISSIONERS
DISTRICT OF COLUMBIA,
Washington, September 13, 1881.

GENTLEMEN: I have the honor to submit copies of orders made by the board during the fiscal year ending June 30, 1881.

No progress has been made during that period in the old record division, because of the continued necessity for employing the clerks provided for that division in other departments of the District government. I renew my recommendation of last year respecting the advantage of placing this work under the supervision of an officer who shall give his exclusive attention to it.

The clerical and messenger force of this office have discharged their duties commendably. Mr. James Campbell probably has the most arduous desk in the District service, and has acquitted himself with his usual intelligence and industry. The services of Mr. J. T. W. Ourand, who has been on duty in this office temporarily, have been rendered in a highly satisfactory manner, and are indispensable, especially during the sessions of Congress, when a large additional amount of labor is connected with the Commissioners' correspondence with that body and its committees. I desire further to recommend that Mr. Frank H. Loving, messenger clerk in this office, be promoted to a clerkship in this office or to a like position in some other department of the District government. He has been so directly under your observation that no testimony from me is necessary to inform you of his efficiency and reliability.

Very respectfully,

WILLIAM TINDALL,
Secretary.

THE COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

OFFICE OF THE COMMISSIONERS
DISTRICT OF COLUMBIA,
Washington, July 1, 1880.

Ordered, That all employes of the District are forbidden to furnish information to parties holding claims against the District of Columbia

which are covered by the provisions of an act of Congress approved June 16, 1880, entitled "An act to provide for the settlement of all outstanding claims against the District of Columbia, and conferring jurisdiction on the Court of Claims to hear the same, and for other purposes;" and all employes are forbidden to give any assistance, in any form or manner, or at any time, either in or out of office hours, to such claimants.

That all applications by claimants, under the provisions of the above-mentioned act, for information from the records of the District shall be referred to the Attorney-General of the United States, for his opinion as to whether the information asked can be furnished without injury to the interests of the District.

That the drawback certificates received by the collector of taxes in payment of special assessments shall be canceled and turned over by him to the chief of the special assessment division, taking his receipt therefor.

That drawback certificates received in payment of special assessments upon which lien certificates are held by third parties shall be stamped "Received in payment of special assessments upon which lien certificates are not held by the sinking fund."

That the collector of taxes shall report daily to the chief of the special assessment division a detailed statement of all collections made on account of special assessments.

That from and after this date the auditor and comptroller shall cause the key of the vault-room containing the records of the auditor's office of the late board of public works and the records of the late board of audit to be deposited in his safe each day when the room is vacated.

That from and after this date *no person*, except the members of the fire board and the heads of bureaus, shall be admitted into the Columbia Building after office hours, without permission, in writing, from the Commissioners, or from one of them.

JULY 2, 1880.

Ordered, That as the repair of the Seventh street road cannot be estimated, nor specifications drawn, the Engineer Commissioner is instructed to do the work by day's work, as repairs.

JULY 3, 1880.

Ordered, That the offices of the District of Columbia be closed on Monday, July 5, 1880.

JULY 6, 1880.

Ordered, That a wagon-stand is hereby established on the east side of the carriageway of High street, immediately below Jones's alley, in the city of Georgetown, until otherwise ordered; and all parties using this stand must first agree to remove, every twenty-four hours, the manure and dirt arising from their occupancy of the same.

JULY 6, 1880.

Ordered, That in the revision of special assessments of streets or portions thereof, where the grading or other specific work is incomplete,

the charge for the work not completed shall be deducted from the assessment and charged to the general fund, to be taken up in any future assessment that may be made upon completion of the work, or held as an offset to any claims for damages that may be made on behalf of the property affected thereby.

In carrying into effect this order, all grades shall be considered complete which have been brought within two feet of actual grade from street to street.

JULY 10, 1880.

Ordered, That William Morgan be relieved as a member of the license committee, and that Dr. E. M. Chapin take his place as a member of said committee.

JULY 12, 1880.

Ordered, That the chief of the special assessment division is hereby authorized to receive and receipt for all books, papers, records, property and securities belonging to that division which have heretofore been under the charge of Mr. George W. Beall.

Receipts will be given in triplicate, one copy to be deposited with the secretary to the Commissioners.

JULY 13, 1880.

Ordered, That in the revision of assessments in cases of corner lots assessed for sewers under a corporation or other assessment not subject to revision, credit may be given on a subsequent assessment for sewers on the remaining side, not to exceed 75 feet.

That the chief of the special assessment division shall be required to give bond in the sum of five thousand dollars.

JULY 20, 1880.

Ordered, That the condemnation of land for an alley in square numbered 141 in the city of Washington, made on the first of May, A. D. 1880, by the jury summoned for that purpose by the United States marshal of the District of Columbia, is hereby approved. (See order of September 20, 1880, revoking this order.)

JULY 20, 1880.

Ordered, That the collector of taxes shall transmit to the chief of the special assessment division all collections made on account of special assessments upon which lien certificates have been issued and are not held by the sinking fund, taking his receipt therefor.

JULY 23, 1880.

Ordered, That from and after this date the Commissioners will only pay fees for attendance as witnesses in the police court to the persons to whom the certificates are issued, unless it can be satisfactorily shown that the witness is physically unable to present the certificate in person.

JULY 24, 1880.

Ordered, That all employés of the District of Columbia are enjoined to attend strictly to their legitimate duties during the hours allotted for work, and not to absent themselves from their places without permission of the officers in charge of their respective divisions. *Visiting, loafing, or gossiping* will not be tolerated, and any employé violating this order will be liable to dismissal.

AUGUST 7, 1880.

Ordered, That the funds returned by the First National Bank of the city of New York to the Commissioners, under date of 9 and 13 July, 1880, which funds had previously been received by George W. Beall on tax lien certificates numbered 1452, 3172, 227, and 24, supposed to be held by said bank, be delivered to William O. Roome, chief of special assessment division, for settlement with said Beall, and the receipt of said Roome taken therefor.

AUGUST 11, 1880.

Ordered, That section 23 (page 23, line 8) of the building regulations be amended as follows: strike out the words "six and one-half feet," and insert *eight feet on parked streets when the parking is less than twenty-four feet wide, and ten feet when the parking is over twenty-four feet wide.*

AUGUST 26, 1880.

Ordered, That the chief of the special assessment division shall transmit to the Commissioners, to be forwarded to the commissioner of the sinking fund, all certificates issued by the late board of audit which are now in his possession, received by his office in payment of special assessments, pledged to the redemption of 8 per cent. certificates of indebtedness.

SEPTEMBER 7, 1880.

Ordered, That the Engineer Commissioner of the District of Columbia is authorized to advertise the intention of the Commissioners to open and straighten the Fort Baker road, from the intersection of Naylor and Good Hope roads, to and beyond the old site of Fort Baker, in the county.

SEPTEMBER 9, 1880.

Ordered, That the chief of the special assessment division shall have access to such records of the late board of public works and board of audit as he may require, such records not to be removed by him from the vault in which they are now deposited.

SEPTEMBER 9, 1880.

Ordered, That in accordance with a provision of the "Act making appropriations to provide for the expenses of the government of the District of Columbia for the fiscal year ending June thirtieth, eighteen hundred and eighty-one and for other purposes," approved June 4, 1880, Commissioner William J. Twining is selected by the Board of Commissioners to be a trustee of the Columbia Hospital for Women and Lying-in-Asylum.

SEPTEMBER 9, 1880.

Ordered, That in accordance with a provision of the "Act making appropriations to provide for the expenses of the government of the District of Columbia for the fiscal year ending June thirtieth, eighteen hundred and eighty-one, and for other purposes," approved June 4, 1880, the president of this board is selected to visit and investigate the management of the private charitable institutions, accepting money appropriated for their aid by said act; and Commissioner Thomas P. Morgan is selected to be a trustee of the Reform School.

SEPTEMBER 8, 1880.

Ordered, That drawback certificates which may hereafter be received on account of lien certificates *not* held by the sinking fund will be stamped "Received for holder of lien certificate not held by the sinking fund."

When such drawback certificates are surrendered to the holder of the lien certificate for which they were received, they will be stamped "Delivered, payable to the order of _____, holder of lien certificate," and indorsed by the chief of the special assessment division.

Certificates so stamped and indorsed are receivable as provided for by the acts of June 19, 1878, and June 27, 1879.

So much of the orders of July 1, 1880, and September 4, 1880,* as conflict with this order are hereby revoked.

SEPTEMBER 15, 1880.

Ordered, That D. E. McComb, leveler in the engineer department, is directed to proceed to Pittsburgh, Pa., to make a thorough examination and tests of the iron manufactured by the Pittsburgh Bridge Company for the reconstruction and strengthening of the M street bridge over Rock Creek.

SEPTEMBER 20, 1880.

Ordered, That at the request of the property owners, original petitions for the condemnation of an alley in square 141, which alley has not been opened and upon which no assessment has been paid, the order of July 20, 1880, approving the said condemnation is hereby revoked, and all proceedings heretofore taken in regard thereto are hereby annulled.

SEPTEMBER 21, 1880.

Ordered, That Maj. W. J. Twining, Engineer Commissioner, is hereby detailed to muster the National Rifles as national guard of the District of Columbia.

SEPTEMBER 27, 1880.

Whereas the improvement of Vermont avenue between P and R streets, northwest, was not included in the estimates sent to Congress, on which the current appropriations for work on various streets were based, it is—

Ordered, That so much of the award to J. S. Baldwin on the 8th instant as refers to Vermont avenue between P and R streets, northwest, is hereby revoked.

* See L. S. 13072 and 13073 C. O.

That the contract of J. S. Baldwin for laying asphalt pavement on Sixth street, northwest, between P and Boundary, be extended to include the laying of asphalt pavement on Sixth street, northwest, from P street to New York avenue, at the same price per square yard as named in the original contract.

OCTOBER 2, 1880.

Ordered, That the Engineer Commissioner is hereby authorized to advertise for proposals for the removal of bodies from the Holmead cemetery.

OCTOBER 4, 1880.

Ordered, That the offices of the District government be closed after 10 o'clock a. m., on the 5th instant.

That hereafter the streets of that part of the District of Columbia known as Georgetown will be known on the official records of the District of Columbia by the following names, to wit:

Street hitherto called—

North street, as	Twenty-sixth street.
Monroe street, as	Twenty-seventh street.
Mill street, as	Twenty-seventh street.
Rock street, as	Rock street.
Montgomery street, as	Twenty-eighth street.
Greene street, as	Twenty-ninth street.
Washington street, as	Thirtieth street.
Jefferson street, as	Jefferson street.
Congress street, as	Thirty-first street.
Valley street, as	Valley street.
High street, as	Thirty-second street.
Potomac street, as	Potomac street.
Market street, as	Thirty-third street.
Frederick street, as	Thirty-fourth street.
Fayette street, as	Thirty-fifth street.
Lingan street, as	Thirty-sixth street.
Warren street, as	Thirty-seventh street.
Water street, as	Water street.
South street, as	South street.
Grace street, as	Grace street.
Needwood street, as	L street.
Aqueduct street, as	Pennsylvania avenue
Bridge street, as	M street.
Olive street, as	Olive street.
Prospect street, as	Prospect street.
Gay street, as	N street.
First street, as	N street.
Dunbarton street, as	Dunbarton street.
Beall street, as	O street.
Second street, as	O street.
West street, as	P street.
Third street, as	P street.
Stoddard street, as	Q street.
Fourth street, as	Q street.
Fifth street, as	R street.
Sixth street, as	S street.
Seventh street, as	T street.
Eighth street, as	U street.
Road street, as	U street.

The official numbers of the houses on the streets above mentioned will be as follows, to wit: Houses on the north and east sides of streets will bear odd numbers; houses on the south and west sides of streets will bear even numbers. Each number will be considered equivalent to a front of *twenty* feet. Of houses fronting on streets running north

and south, the houses on the northern corners will be numbered as follows, to wit:

At corner of Water street	1000 and 1001
L street	1100 and 1101
M street	1200 and 1201
N street	1300 and 1301
O street	1400 and 1401
P street	1500 and 1501
Q street	1600 and 1601
R street	1700 and 1701
S street	1800 and 1801
T street	1900 and 1901
U street	2000 and 2001

From these corner houses the numbers will proceed in regular order by addition of two for each front of *twenty* feet on each side of the street until the next street of those just mentioned is arrived at.

Of houses fronting on streets running east and west, the houses on the western corners will be numbered as follows, to wit:

At corner of Twenty-sixth street	2600 and 2601
Twenty-seventh street	2700 and 2701
Twenty-eighth street	2800 and 2801
Twenty-ninth street	2900 and 2901
Thirtieth street	3000 and 3001
Thirty-first street	3100 and 3101
Thirty-second street	3200 and 3201
Thirty-third street	3300 and 3301
Thirty-fourth street	3400 and 3401
Thirty-fifth street	3500 and 3501
Thirty-sixth street	3600 and 3601
Thirty-seventh street	3700 and 3701

From these corner houses the numbers will proceed in regular order by addition of two for each front of twenty feet on each side of the street until the next street of those just mentioned is arrived at.

The surveyor of the District of Columbia is hereby directed to make a survey of that part of the District of Columbia above referred to, and to fix the number of each house in accordance with the requirements of this order. While the survey is in progress he will notify the inhabitant of each house of its official number, and will furnish to each house a painted sign of inexpensive pattern bearing the numbers. Upon completing the survey he will make two identical plats of the same, showing the names of the streets and the location and number of each house; one of these plats will be furnished to the Commissioners of the District of Columbia, and the other will be kept in the records of the surveyor's office, together with a copy of this order.

The expenses of the survey and of purchasing the painted signs will be paid from the appropriation for general contingent expenses of the District of Columbia.

OCTOBER 19, 1880.

Ordered, That D. E. McComb, leveler in the engineer department, is directed to proceed to Pittsburgh, Pa., to make a thorough examination and tests of the iron manufactured by the Pittsburgh Bridge Company for the reconstruction and strengthening of the M street bridge over Rock Creek.

OCTOBER 23, 1880.

Ordered, That pursuant to the provisions of the act of Congress providing a permanent form of government for the District of Columbia,

approved June 11, 1878, and "An act making appropriations to provide for the expenses of the government of the District of Columbia for the fiscal year ending June 30, 1881, and for other purposes," approved June 4, 1880, a tax be, and the same is hereby, levied of *one dollar and fifty cents* (\$1.50) on every one hundred dollars of real estate not exempted by law, except upon real property held exclusively for agricultural purposes without the limits of the cities of Washington and Georgetown, and so designated by the assessor in his annual return, the rate on which shall be *one dollar* (\$1) on every one hundred dollars; and upon all personal property in the District of Columbia, not taxable elsewhere, *one dollar and fifty cents* (\$1.50) on every one hundred dollars, according to the cash valuation thereof. The first half of the said tax shall be due and payable on the 1st day of November, 1880, and the second half on the 1st day of May, 1881.

OCTOBER 27, 1880.

Ordered, That Thomas C. Cox, water registrar, is hereby, at his own request, relieved from duty as a member of the board for the examination of applications for liquor licenses, and that Mr. Charles S. Jones is appointed in his stead.

Dr. E. M. Chapin is hereby designated chairman of said board.

OCTOBER 29, 1880.

Ordered, That in those cases in which drawback certificates have been received for the holder of a lien certificate in payment of the assessment for which the lien was issued and canceled by error, the collector of taxes is directed to receive the said lien certificate in payment of such assessments and general taxes as are by law payable in the drawback certificates so erroneously canceled, and to note upon the lien certificate so received the numbers and the amounts of the drawbacks received for them and erroneously canceled, and deliver the same to the treasurer and assessor of the District of Columbia to be canceled.

That the south side of B street, between Seventh and Ninth streets, northwest, is hereby assigned for occupation, on market days, to the wagons of butchers and dealers in the Washington market, and the country market-wagons may stand, free of charge, against the curb on the north front of the Washington market building, between the wings of said building.

OCTOBER 30, 1880.

Ordered, That all collections made on account of assessments for condemnation of alleys shall be delivered to the treasurer and assessor of the District of Columbia, who will make special deposits of the same in the Treasury of the United States, as in the cases heretofore specially ordered.

NOVEMBER 13, 1880.

Ordered, That that part of the order of December 31, 1879, regulating the watch at this building which requires the superintendent of property to make details from the employés under his direction for watch duty in this building on Sundays and holidays is hereby revoked on account of the increase of the regular day watch by the appointment of the remaining watchman provided for by appropriation.

NOVEMBER 19, 1880.

Ordered, That the second paragraph of the order passed October 29, 1880, be amended so as to read as follows:

That the south side of B street between Seventh and Ninth streets northwest, is hereby assigned for occupation on market days to the wagons of butchers and dealers holding stalls in the Washington Market; and the country market wagons may stand, free of charge, against the north side of the plank pavement recently laid in the passage way on the north front of the Washington Market building.

That a copy of the above shall be delivered to the major and superintendent of police for immediate enforcement.

NOVEMBER 20, 1880.

Ordered, That in the revision of the assessments for surface work where the total expenditure was less than \$500, the chief of the special assessment division is authorized to charge such expenditure to the "general fund."

NOVEMBER 24, 1880.

Ordered, That the offices of the government of the District of Columbia be closed on the 25th instant, pursuant to the proclamation of the President of the United States designating that day as an occasion for public thanksgiving.

DECEMBER 2, 1880.

Whereas section 222 of the Revised Statutes of the United States relating to the District of Columbia provides as follows: "No open space, public reservation, or other public ground, nor any portion of the public streets or avenues shall be occupied by any private person, or for any private purpose whatever," it is hereby—

Ordered, That all stands for business or other private purposes occupying any street, avenue, alley, road, or thoroughfare, or public ground in the District of Columbia, or any sidewalk or portion thereof, shall be removed therefrom on or before the 1st of January, 1881; and all permission and consent for such occupancy by stands are hereby revoked, and none will be given hereafter by any department of the District government.

(An ordinance respecting nuisances, of the city of Georgetown, D. C., approved April 30, 1808, makes substantially the same prohibition against occupancy of sidewalks for private purposes.)

OFFICE OF THE COMMISSIONERS
OF THE DISTRICT OF COLUMBIA,
Washington, December 10, 1880.

AN ACT to confer upon the Commissioners of the District of Columbia certain powers, duties, and limitations contained in chapter eight (Water Service) of the Revised Statutes of the United States relating to the District of Columbia, and for other purposes.

Be it enacted by the Senate and the House of Representatives of the United States of America in Congress assembled, That the Commissioners of the District of Columbia shall have all the powers and be subject to all the duties and limitations provided in chapter eight of the Revised Statutes of the United States relating to the District of Columbia, excepting such powers and duties as belong to the Chief of Engineers: *Provided*, That water-main taxes and water rents shall be uniform in said District: *And provided*

farther, That the rate of interest specified in section two hundred and two of said Revised Statutes shall be increased to ten per centum per annum from and after the passage of this act.

Approved June 10, 1879.

Ordered, That under the authority invested in the Commissioners of the District of Columbia by the above-recited act, the following schedule of annual water rates is adopted, to take effect on the 1st of January, 1881, and will continue in force until otherwise ordered:

DOMESTIC RATES.

The rates for domestic purposes will be charged according to stories and front feet. The addition of twenty per cent. made for the current year is hereby reduced to ten per cent. on the rates previously charged, viz:

On all tenements two stories high, with front width of sixteen feet or less, \$3 per annum. Each additional story, \$1, and each additional front foot, 25 cents.

SPECIAL BUSINESS AND MISCELLANEOUS RATES.

In every case where business-houses or tenements are occupied also for domestic purposes, the regular charge for domestic purposes according to the above rates will be made, and in addition thereto the special business rate, as hereinafter specified.

Special and miscellaneous business will be charged at the following rates, viz:

Bar-rooms and restaurants, from fifteen to fifty dollars per annum.

Billiard-rooms, from five to twenty dollars per annum.

Eating-houses, from eight to twenty dollars per annum.

Barber-shops, from six to twelve dollars each per annum.

Public baths, four dollars per annum for each and every tub.

Bakeries, from three to fifteen dollars per annum.

Boarding and tenement houses will be charged at a rate in accordance with the stories and front feet, and the ten per cent. addition of same, and in addition thereto fifty cents per annum for each and every room over and above the number of three rooms in said boarding-house or tenement.

Building-purposes.—For each one thousand bricks laid, three cents per thousand. Special rates will be charged for public works.

Brick-yards.—Ten to fifty dollars each per annum, according to production. Machinery and horse-power extra, at regular rates.

Boarding-schools and school-houses.—From five to ten dollars per annum.

Cow-stables.—For each and every cow, twenty-five cents per annum.

Depots.—Locomotive engines taking water once per day, seventy-five dollars; twice per day, one hundred and fifty dollars. The building extra, according to number of offices, bars, and refreshment rooms; water-closets and urinals, three dollars each.

Dye-houses.—Five to twenty dollars per annum. Machinery taking water, extra.

Fountains will only be used three hours per day, and will be charged as follows: One-sixteenth of an inch jet, five dollars per annum; for a one-eighth of an inch jet, ten dollars per annum; for a one-quarter of an inch jet, twenty dollars per annum; for a one-half inch jet, fifty dollars

per annum; for a three-quarters of an inch jet, seventy-five dollars per annum; and for an inch jet, one hundred and fifty dollars per annum.

In case a meter is used there will be charged one cent for each and every hundred gallons. No fountain will be permitted on any premises where the water is not taken for other purposes, and to an extent sufficient for those purposes; and if the water from the jet or fountain be permitted to flow into premises adjacent to or in the neighborhood, where it may be used for other purposes, the supply will be stopped, and the amount of payment forfeited.

Florists will be charged at the rate of from five to twenty dollars per annum, according to the size of the premises.

Horses, private.—For each and every horse, one dollar and fifty cents; said sum to include water for washing carriages.

Horses, hackney, and draught.—For each and every horse, seventy-five cents per annum.

Hotels.—One dollar for each bed or furnished room; bar, billiard-rooms, barber-shops, offices, stores, and machinery taking water, extra.

Laundries.—Five to fifteen dollars according to general business. Machinery using water, according to rates for stationary engines and boilers.

Livery stables.—For each and every horse, seventy-five cents per annum.

Mills.—Five dollars. Machinery extra, according to the rates for stationary engines.

Market-houses.—Fifty cents per stall.

Offices.—Three dollars per annum.

Printing-houses.—From five to ten dollars per annum, according to the number of presses. Machinery in same using water will be charged in addition thereto, according to the rate for stationary engines.

Stationary engines.—Three dollars per horse-power. Boilers without engines, one dollar and seventy-five cents per horse-power.

Stores, shops, confectionaries, warehouses, and mills.—Five to ten dollars per annum

Steamboats, according to tonnage; 50 tons and under, twenty-five dollars; over 50 tons, fifty dollars.

Street-washers, where parties use same, and water is not taken in the house, will be charged at rates from three to ten dollars per annum, according to nozzle or tap, and may be used not longer than thirty minutes immediately before sundown.

Street-sprinklers will be charged at the rate of one cent for each and every thousand gallons of water used.

Slaughter-houses.—From five to twenty dollars per annum, according to general business. Machinery taking water, extra, according to rates for stationary engines.

Swimming-baths, manufactories, paper mills, or any other business requiring a large supply of water, will be required to use a meter, and will be charged at the rate of ten cents for each and every thousand gallons of water used.

DECEMBER 20, 1880.

Ordered, That the order of the 2d instant, enforcing the law against the occupation of public ground for private purposes applies to auctioneers as well as to all others, and they shall not expose goods nor other articles for sale upon any public ground or place covered by the terms of said order. (See opinion of attorney, District of Columbia, December 18, 1880.)

DECEMBER 24, 1880.

Ordered, That the offices of the District government be closed on the 25th instant and 1st proximo, to-day at 12 o'clock m., and on the 27th, 28th, 29th, 30th, and 31st instants, at 3 o'clock p. m.

JANUARY 3, 1881.

Ordered, That in cases where tender was made of amounts due upon special assessments and refused before the issue of lien certificates, all interest shall be remitted, and certificates subsequently issued will be recalled or reduced to the amount of the net assessment. If the lien certificate was issued previously, then interest will be charged to date of tender.

That the offices of the District government in the Columbia building be closed to the public each day at 3 o'clock to enable the employés to make daily settlements of business.

FEBRUARY 2, 1881.

Ordered, That the surveyor of the District be paid 33½ cents per number for his services in carrying into effect the provisions of the order of October 4, 1880, for the renumeration of the buildings in that part of the District of Columbia known as Georgetown.

FEBRUARY 9, 1881.

Ordered, That the auditor and comptroller is directed to report to the Commissioners, at the end of each week the receipts and expenditures during the week, showing balance in the Treasury to the credit of the District of Columbia.

FEBRUARY 11, 1881.

Ordered, Whereas, on the 23d day of August, 1878, John McCauley entered into a contract with the District of Columbia, No. 105, for the removal of garbage and night soil, &c., as in said contract is provided, and among the general conditions thereof is a paragraph No. 2, reserving to the Commissioners the right and power to suspend said McCauley from the further execution of the said contract, and to substitute other parties in his place for the better execution of the same; and

Whereas, pursuant to the powers reserved in said second paragraph, the Commissioners did suspend said McCauley, and afterwards, to wit, on the 19th day of March, 1879, said Commissioners entered into a supplemental contract with H. Clay Jones, who was thereby subrogated to the rights and duties of said McCauley under said contract, and who duly executed his bond with sureties for the due performance of his agreement; and

Whereas, afterward, said Jones was by the order of the said Commissioners, also suspended for cause, under said second paragraph, and thereupon his said sureties employed and appointed one Francis Carter as their agent to execute said contract, and who now is an agent of said sureties who stand in the place of said contractor under said contract, and

Whereas said work in his hands is unnecessarily delayed and improperly performed, so that the public good requires a further exercise

of the powers of said second paragraph. Therefore it is on this 11th day of February, 1881,

Ordered, That William O. Denison, Ruth C. Denison, Patrick Danaher, and John H. Clark, sureties of said Jones, and Francis Carter, their agent, be suspended from the further performance of all work and duty in the execution of said contract, to take effect from February 11, 1881, and that a copy of this order be served upon each of the parties, sureties in said bond for said H. Clay Jones, and said Francis Carter, their agent.

That the inspector of buildings, upon application by owners or occupants of property on the line of the proposed procession on the 4th proximo, will issue permits for the erection of stands for observation in front of such premises where there are bay-windows or other permanent projections; but such stands shall not extend out beyond such projections, nor shall any such stands be permitted where there are no such projections. Stands erected under this order must be removed on or before the 5th proximo.

That the parties occupying the garbage wharf and premises on James Creek Canal will vacate them at once, and transfer to the health officer all property in their possession, or under their control, belonging to the District of Columbia.

FEBRUARY 21, 1881.

Ordered, That the offices of the District government be closed to-morrow, the anniversary of Washington's birthday.

FEBRUARY 25, 1881.

Ordered, That the offices of the District government be closed at 2 o'clock p. m., next Monday, out of respect to the memory of the late Henry D. Cooke, ex-governor of the District, and to enable the employés to attend the funeral; and that the Commissioners attend the funeral in a body, as a further mark of respect; and that a copy of this order be sent the family of the deceased.

That John M. McAvoy be, and is hereby, suspended as an authorized plumber.

MARCH 5, 1881.

The Commissioners having been informed of the death of Hon. Richard Wallach, ex-mayor of the late corporation of Washington, it is

Ordered, That on Monday, 7th March, the day of the funeral of the deceased, this office be closed at 12 o'clock m., to enable the employés of the District government to be present at the obsequies, and that, as a further mark of respect, the Commissioners will, in a body, attend the funeral. The secretary is directed to transmit to the family of the deceased a copy of this order.

MARCH 8, 1881.

Ordered, That the office of the chief of the special assessment division will hereafter be closed to the public at 2 o'clock p. m. daily.

That the chief of the special assessment division be directed to proceed at once to prepare for issue tax-lien certificates on all lots the assessments of which have been revised and which remain unpaid.

That all drawback certificates now in custody of the chief of the special assessment division and held for account of the sinking fund be trans-

ferred to the custody of the auditor and comptroller; and that all drawback certificates hereafter received by him for account of said fund shall, after proper examination and verification, be also transferred to the auditor and comptroller.

MARCH 14, 1881.

Ordered, That no stalls will be rented in the Northern Market after the 1st of July, 1881.

MARCH 17, 1881.

Ordered, That the property which, by sections 3 and 6 of the act of Congress of March 3, 1881, making appropriations for the expenses of the District of Columbia for the fiscal year ending June 30, 1882, the Commissioners are authorized to sell, shall be offered for sale on the following terms, viz, one half each and balance in six and twelve months, with deed of trust to secure deferred payments; and that said property be at once advertised by the secretary for sale to the highest bidder, reserving the right to the Commissioners to reject any and all bids.

MARCH 21, 1881.

Ordered, That the request of the Commissioners, of February, 16, 1881, to William Birney, trustee, to sell all the stands in the market building known as the Western Market, southeast corner of K street and twenty-first street, northwest, in the city of Washington, on which security was taken by trust deed for the payment of certain *bonus* notes, which notes are now held by the District of Columbia, and on which default of payment has taken place, be and the same is hereby reaffirmed; and the said trustee is hereby directed to proceed at once to the sale of all stands on which default has been made, particularly of stands Nos. 19, 24, 25, 28, 29, 31, 34, 37, 38, 48, 49, 71, 82, and 91, and the terms of sale advertised by said trustee are hereby approved.

MARCH 23, 1881.

Ordered, That the auditor and comptroller of the District of Columbia proceed at once to cancel all uncanceled sewer certificates now in his custody, as mentioned in the report of Daniel Donovan, dated 21st March, 1881.

APRIL 12, 1881.

Ordered, That the Mutual Union Telegraph Company be allowed to erect a line of telegraph poles and wires down Sherman avenue to Tenth street, west, and Boundary; down said Tenth street to W street, north; on said W street to Twelfth street, west; down said Twelfth street to O street, north, and stop at the last-named point until further orders.

APRIL 16, 1881.

Ordered, That the order of the 12th instant be extended so as to permit the Mutual Union Telegraph Company to extend their line from Twelfth and O streets, northwest, down Twelfth street to New York avenue, and on reaching that avenue to carry an underground line through the intercepting sewer to a point near their main office between Fourteenth and Fifteenth streets, northwest.

APRIL 19, 1881.

Ordered, That hereafter all plats of subdivisions must have the official approval of the Commissioners before being recorded by the surveyor of the District of Columbia.

APRIL 20, 1881.

Ordered, That the order of the 19th instant is hereby amended by adding that no new subdivision of property already subdivided will be admitted to record until all taxes due thereon shall have been paid.

APRIL 21, 1881.

Ordered, That the Commissioners of the District of Columbia be present to represent the District before the board of public works of the State of Maryland, at its meeting in Cumberland in that State on the 22d instant, as a measure tending to affect the prosperity of important interests in this District will then be brought before that board for consideration.

APRIL 23, 1881.

Ordered, That the offices of the District government be closed at 12 o'clock, m., on Monday, the 25th instant, the occasion of the unveiling of the statue of the late Admiral Farragut, and that all district officers and employes actively connected with organizations that will participate in the ceremonies attending the same may be absent the entire day.

APRIL 26, 1881.

Ordered, That the Engineer Commissioner cause to be prepared the papers and plats for the condemnation of land necessary for the widening of Fourteenth street beyond Boundary to a width of 80 feet, subject to the verbal agreement heretofore entered into by parties representing the late Stone estate that the rate of compensation shall not exceed 10 cents per square foot.

APRIL 29, 1881.

Whereas the attorney for the District of Columbia reports that a verdict and judgment have been given in the supreme court of the District in favor of the First National Bank of the City of New York for the amount actually paid, with interest at six per cent. from the day of such payment, for certain erroneously issued certificates of indebtedness of the late board of public works, which were surrendered to said attorney in open court and by him sent to the Commissioners, as follows:

Lot.	Square.	Amount.	Number.
Part of 18	529	\$156 38	842
Part of N	570	201 65	905
Part of 1	203	212 15	964
Sub. 1	185	213 83	1274
Part of sub. 21	199	190 40	1303
Part of 6	86	140 48	2254
Part of 1	454	153 74	2999
Part of 8	848	159 70	82
Sub. 1	216	788 86	83
K	496	232 30	527
Sub. 27	457	89 43	814
Sub. 28	457	89 43	815
Part of 5	404	170 72	1104
Part of 21	378	285 96	1300

It is ordered, That the said certificates of indebtedness be forwarded to the auditor and comptroller of the District of Columbia, who will cancel them.

APRIL 30, 1881.

Ordered, That H. C. Jones be directed to vacate the premises on James Creek Canal, known as the garbage depot, immediately.

MAY 7, 1881.

Ordered, That during the present temporary absence of the chief of the special assessment division, Roger Williams, now employed in that division, is directed to perform the duty of certifying bills to the collector for payment.

MAY 10, 1881.

Ordered, That dumping places, not exceeding eight in number, to be hereafter designated by the Commissioners, be established, where all street, yard, and alley sweepings and cleanings, and earth from excavations not otherwise provided for, shall be deposited. All persons placing or causing such materials to be placed elsewhere will be subject to the penalty of the law.

MAY 11, 1881.

Ordered, That the clause prescribing fire limits, contained in the second section of the order of August 23, 1878, establishing building regulations for the District of Columbia, is hereby repealed and the following substituted therefor:

Fire limits.—The city of Washington, except that portion east of Eleventh street, east, and south of I street, south; and that portion of the city of Georgetown bounded on the north by Road and Eighth streets, on the west by the boundary line of the city of Georgetown, on the south by the Potomac River, and on the east by the city of Washington, within which it shall not be lawful to erect, construct, enlarge, alter, repair, or remove any wooden building except as hereinafter prescribed.

MAY 12, 1881.

Ordered, That the following are hereby designated as dumping places under the order of the 10th instant:

N street, between Twenty-seventh street and Rock Creek.

C street, northwest, between Seventeenth and Eighteenth streets.

Canal street, southwest, between First and South Capitol streets.

L street, northeast, between North Capitol and First streets.

Sixth street, southeast, between L and M streets.

Also, if the owner permits, on the square bounded by Q, P, Seventeenth and Eighteenth streets, northwest.

MAY 17, 1881.

Ordered, That so much of the order of July 1, 1880, as requires the transmittal of drawback certificates to the special assessment division is hereby revoked, and the certificates received by the collector of taxes from and after the 30th ultimo will be sent by that officer direct to the auditor and comptroller District of Columbia.

That no permit nor license be issued to any person or persons to hold entertainments of any kind at what are known as "Fisher's Hall" and "Potomac Hall" at corner of N and Thirty-second streets, northwest, without the same is recommended by the lieutenant of police for that precinct and approved by one of the Commissioners of the District of Columbia.

MAY 25, 1881.

Ordered, That during the present temporary absence of the chief of the special assessment division, Roger Williams, now employed in that division, is directed to perform the duty of certifying bills to the collector for payment.

MAY 26, 1881,

Ordered, That the market master of the Northern Market be directed to notify all dealers in that market that no stalls nor stands will be rented therein after June 30, 1881, and that they will have to vacate those held by them on that date. All rentals in said market for June next must be collected by the 5th of that month.

That in cases where property has been sold for non-payment of any special assessment, the chief of the special assessment division is authorized and directed to enter upon the records of his office upon such account "satisfied by sale."

MAY 28, 1881.

Ordered, That the offices of the District of Columbia be closed on "Decoration day," Monday, the 30th instant.

MAY 31, 1881.

Ordered, That the Mutual Union Telegraph Company be permitted to erect a line of telegraph poles and wires from their present line, commencing at corner of Twelfth and T streets, northwest, along said T street to Boundary; along Boundary to North Capitol street; along North Capitol street to New York avenue, and thence by way of the North Capitol street sewer to the Capitol.

JUNE 10, 1881.

Ordered, That Messrs. Ros. A. Fish of the treasurer and assessor's office, Charles V. Gordon of the water registrar's office, Theron W. Parsons, clerk of the committee on liquor licences, and Henry L. West, clerk in office of the major and superintendent of Metropolitan Police, are hereby detailed to schedule the proposals for general supplies received to-day, and will meet at 9 o'clock to-morrow morning for that duty in the office of the chief engineer of the fire department, which they will occupy during the performance of the work.

JUNE 13, 1881.

Ordered, The order of May 17, 1881, made for the temporary relief of the special assessment division, being no longer needed, is hereby revoked, and the collector of taxes is directed to transmit, as formerly, all drawback certificates received by him in payment of special assessments to the chief of the special assessment division, taking his receipt therefor.

JUNE 16, 1881.

Ordered, That the major of police detail from the police force an officer well versed in shipping and the usual regulations touching the mooring, anchoring, fastening, &c., of vessels, to act as harbor-master for Washington, and direct him to report to the Commissioners for instructions.

JUNE 17, 1881.

Ordered, That officer John R. Sutton, of the Metropolitan Police, having been detailed to act as harbor-master of Washington, in addition to his present duties as inspector of marine products, all persons interested are hereby notified to respect his orders pertaining to his duties in the premises.

JUNE 25, 1881.

Ordered, That the following changes be made in the offices named, to take effect on and after the 30th instant:

V. R. Morgan is removed from the office of clerk and F. E. Shepperd appointed to the vacancy thus made.

Frank Reeside and J. E. Krouse, clerks in the office of the treasurer and assessor, are removed on account of insufficiency of appropriation.

J. Smolinski and H. H. Voss, watchmen, are removed, and the duties of the offices thus vacated will be discharged by policemen, who will be under the direction of the major of police.

J. W. Clark, clerk in the special assessment division, will be placed on the temporary roll of the collector's office, with compensation at the rate of one hundred dollars per month.

The firm of Bailey & Fletcher not having complied with the requirements of the order of the board of May 24, 1881, relating to the bids received May 5, and there being no time for further delay, the contracts for paving the following streets not heretofore awarded, are awarded as follows, viz:

TO A. L. BARBER.

	Yards.	Rate.	Estimated cost.
Sixteenth street, from H street to Scott square	12,200	\$2 09	\$25,498 00
N street, from Fourteenth street to Sixteenth street northwest	4,500	2 08	9,360 00
Eighteenth street, from Pennsylvania avenue to E street northwest	4,500	2 05	9,240 00
Nineteenth street, from N street to P-street circle	3,200	2 06	6,592 00

TO H. L. CRANFORD.

Second street west, from Indiana avenue to I street	10,100	2 08½	21,058 50
Third street east, from Pennsylvania avenue to East Capitol street	3,200	2 09	6,688 00

They being the lowest responsible bidders upon the respective streets.

The Engineer Commissioner is hereby directed to advertise for proposals for fifteen hundred tons of crude asphalt, to be delivered at the property yards at such time as may in his opinion be most advantageous to the District.

JUNE 28, 1881.

Ordered, That hereafter no leave of absence will be granted for a longer time than ten days, except in case of sickness or other urgent circumstances.

JUNE 29, 1881.

Ordered, That from and after the first proximo the major of police will take charge of the Columbia Buildings, and make detail for duty as watchmen at said buildings (in lieu of those whose time of service will expire on the 30th instant) of officers of the police force who, by reason of disability arising from age or exposure, are unsuited for the active duties and exposure to the weather usually required of policemen. These men will be subject to all the rules and regulations of the police force, and will be regularly visited by the inspectors and sergeants as is done in the case of all other beats and stations. The custody of the building with the contents of all the rooms will be in their charge, and the regulations of the Commissioners as to the admission of persons into the buildings after hours strictly enforced.

B.—REPORT OF THE TREASURER OF THE UNITED STATES ON THE DISTRICT SINKING FUND.

Statement of the funded indebtedness of the District of Columbia and late corporations of Washington and Georgetown July 1, 1881.

Description of bonds.	Act authorizing issue.	Date of maturity.	Interest.	
			Rate.	Coin or currency.
Of the District of Columbia:				
Permanent improvement ..	Assembly, July 10 and December 16, 1871.	July 1, 1891	6 per cent...	Coin.
Permanent improvement ..	Assembly, June 26 and 26, 1873.	July 1, 1891	7 per cent...	Currency.
Market stock	Assembly, August 23, 1871, and June 19, 1873.	July 26, 1892	....do	Do.
Water stock	Assembly, July 20, 1871.....	Oct. 1, 1901	....do	Do.
Water stock	Assembly, June 26, 1873	July 1, 1903	....do	Do.
Fifty-year funding.....	Congress, June 20, 1874, February 20 and March 3, 1875.	Aug. 1, 1924	2½ per cent	Do.
Twenty-year funding	Congress, June 10, 1879	July 1, 1899	5 per cent ..	Do.
Of the late corporation of Washington:				
Twenty-year funding	Congress, May 8, 1872.....	July 1, 1892	6 per cent...	Coin.
Thirty-year funding	Assembly, District of Columbia, June 20, 1873.	Nov. 1, 1902	....do	Do.
Three-year (Emery)	Congress, July 7, 1870.....	July 30, 1873	7½ per cent.	Currency.

Description of bonds.	Interest.		Amount registered.	Amount coupon.	Total.
	Payable.	When due.			
Of the District of Columbia:					
Permanent improvement..	Semi-annually.	Jan. 1 and July 1..	.....	\$3,950,200	\$3,950,200
Permanent improvement..	do	do .....	.....	670,000	670,000
Market stock	do	do	\$100,000	50,000	150,000
Water stock	do	do .....	.....	874,000	874,000
Water stock	do	do .....	.....	15,000	15,000
Fifty-year funding	do	Feb. 1 and Aug. 1..	9,045,000	4,422,950	14,067,950
Twenty-year funding	do	Jan. 1 and July 1..	116,000	973,300	1,089,300
Of the late corporation of Washington:					
Twenty-year funding.....	Semi-annually.	Jan. 1 and July 1..	.....	1,145,250	1,145,250
Thirty-year funding.....	do	May 1 and Nov. 1..	.....	660,000	660,000
Three-year (Emery).....	do	Interest ceased .....	.....	100	100
			9,861,000	12,290,800	22,121,800

Stocks and bonds outstanding on which interest has ceased, there being funds for the payment of the principal and interest deposited in the United States Treasury.

Corporation of Washington ten-year bonds	\$150 00
Corporation of Washington 5 per cent. general stock	2,010 01
Corporation of Washington 6 per cent. general stock	4,280 17
Corporation of Washington 6 per cent. canal stock	100 00
Corporation of Georgetown 6 per cent. general stock	200 00
Corporation of Georgetown 8 per cent. general stock	20,000 00
	<hr/>
	26,740 18

Amount of funded debt retired by operation of the sinking fund since July 1, 1878	672,900 00
Reduction in annual interest charge by operation of the sinking fund since July 1, 1878	42,970 77

Statement of the funded indebtedness of the District of Columbia and late corporation of Washington October 1, 1881.

Description of bonds.	Act authorizing issue.	Date of maturity.	Interest.	
			Rate.	Coin or currency.
Of the District of Columbia:				
Permanent improvement ..	Assembly, July 10 and December 16, 1871.	July 1, 1891	6 per cent...	Coin..
Permanent improvement ..	Assembly, June 23 and 25, 1873.	July 1, 1891	7 per cent...	Currency.
Market stock	Assembly, August 23, 1871, and June 19, 1872.	July 26, 1892	do	Do.
Water stock	Assembly, June 20, 1871	Oct. 1, 1901	do	Do.
Water stock	Assembly, June 20, 1873	July 1, 1903	do	Do.
Fifty-year funding	Congress, June 20, 1874, February 20 and March 3, 1875.	Aug. 1, 1924	3½ per cent	Do.
Twenty-year funding	Congress, June 10, 1879	July 1, 1899	5 per cent...	Do.
Of the late corporation of Washington:				
Twenty-year funding	Congress, May 8, 1872	July 1, 1892	6 per cent...	Coin.
Thirty-year funding	Assembly, District of Columbia, June 20, 1872.	Nov. 1, 1902	do	Do.
Three-year (Emery)	Congress, July 7, 1870.	July 30, 1873	7½ per cent.	Currency.

Description of bonds.	Interest.		Amount registered.	Amount coupon.	Total.
	Payable.	When due.			
Of the District of Columbia:					
Permanent improvement ..	Semi-annually.	Jan. 1 and July 1.		\$3,911,300	\$3,911,300
Permanent improvement ..	do	do		685,500	685,500
Market stock	do	do	\$100,000	50,000	150,000
Water stock	do	do		374,000	374,000
Water stock	do	do		15,000	15,000
Fifty-year funding	do	Feb. 1 and Aug. 1.	9,799,000	4,216,700	*14,015,700
Twenty-year funding	do	Jan. 1 and July 1.	114,000	875,300	989,300
Of the late corporation of Washington:					
Twenty-year funding	Semi-annually.	Jan. 1 and July 1.		1,115,550	1,115,550
Thirty-year funding	do	May 1 and Nov. 1		660,000	660,000
Three-year (Emery)	do	Interest ceased		100	100
			10,013,000	11,883,450	21,896,450

* Issue of District three-sixty-fives limited by law to \$15,000,000. Issued to date, \$14,463,050.

34 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Stocks and bonds outstanding on which interest has ceased, there being funds for the payment of the principal and interest deposited in the United States Treasury.

Corporation of Washington ten-year bonds	\$150 00
Corporation of Washington 5 per cent. general stock	2,010 01
Corporation of Washington 6 per cent. general stock	3,480 17
Corporation of Washington 6 per cent. canal stock	100 00
	<hr/>
	5,740 18
	<hr/>
Amount of funded debt retired since July 1, 1878	930 000 00
Reduction in annual interest charge since July 1, 1878	55,467 77

JAS. GILFILLAN,
*Treasurer United States, ex-officio Commissioner of the
Sinking Fund of the District of Columbia.*

OFFICE OF THE TREASURER OF THE UNITED STATES,
Washington, October 1, 1881.

APPENDIX B 1.

ESTIMATES.

TREASURY OF THE UNITED STATES,
Washington, September 16, 1881.

GENTLEMEN: I have the honor to transmit herewith estimate of appropriations required for the service of the fiscal year ending June 30, 1883, by the commissioner of the sinking fund of the District of Columbia, on account of interest and sinking fund on the funded debt, exclusive of water bonds, and for the sinking fund office.

The estimate does not vary from the amounts appropriated by Congress for the current fiscal year except in one item, for salary of Treasurer of the United States, commissioner of the sinking fund, acting as treasurer of the sinking fund, for which an appropriation is estimated of one thousand dollars in accordance with the provision in the act of March 3, 1875 (18 Stat., 376), as follows:

And the salary of the commissioner of the sinking fund acting as treasurer thereof shall be one thousand dollars per annum.

Since the Treasurer of the United States became commissioner of the sinking fund of the District of Columbia (20 Stat., 104, section 7), and by virtue thereof treasurer of the sinking fund, no estimate has been submitted, and no appropriation has been made for the salary.

As you are aware, since the powers and duties of the sinking fund of the District of Columbia have been conferred upon the Treasurer of the United States by the act of June 11, 1878, the labors of this office have been largely increased by the addition of those duties which did not strictly belong to this office. They have, however, been cheerfully performed in addition to the unusual duties devolved upon him by his official relations to the United States. Besides, however, performing the ordinary duties which devolved upon the late sinking-fund commissioners, the Treasurer for three years has been charged with the disbursements of the annual appropriation, now amounting to \$1,213,947.97, involving not only the payment of the interest on the bonded debt but the investment of the amount due the sinking-fund; the calling in and retirement of over a million dollars of the pleasure bonds of the Dis-

trict; the redemption of loans falling due from time to time; the redemption of over \$600,000 of certificates of the late board of audit, and signing and issuing of a like amount of 3.65 bonds, together with signing and issuing the bonds in satisfaction of the judgments of the Court of Claims, rendered in accordance with the act of June 16, 1880, and the collection of the assessments of the authorities of the District of Columbia for special street improvements, and the application of the proceeds to the payment of the 8 per cent. certificates of indebtedness of the District of Columbia.

It is not to be supposed that Congress intended that the Treasurer should assume these additional duties and responsibilities without the compensation which is provided by law therefor; which view is strengthened by the fact that, in appointing the Comptroller of the Currency to act as commissioner of the Freedman's Saving and Trust Company in this city, Congress, by section 5 of the act of February 21, 1881 (21 Stat., 327), authorized him to receive an annual salary of \$1,000, in addition to his present salary, for his services as commissioner aforesaid.

JAS. GILFILLAN,

Treasurer United States.

Hon. COMMISSIONERS DISTRICT OF COLUMBIA,
Washington, D. C.

*Estimates of appropriations required for the service of the fiscal year ending June 30, 1883,
by the commissioner of the sinking fund.*

Detailed objects of expenditure, and explanations.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1882.
DISTRICT OF COLUMBIA.		
For interest and sinking fund on the funded debt, exclusive of water bonds (appropriated March 3, 1879, 21 Stat. at L., p. 466; 20 Stat. at L., p. 410)	\$1, 213, 947 97	\$1, 213, 947 97
For sinking-fund office:		
Salary of the Treasurer of the United States, commissioner of the sinking fund acting as treasurer thereof (March 3, 1875, 18 Stat. at L., p. 76; June 11, 1878, 20 Stat. at L., p. 104, sec. 7)	1, 000 00	.....
Two clerks of class one (appropriated Stat. at L., 21, p. 461)	2, 400 00	2, 400 00
Contingent expenses, including books, stationery, printing, and miscellaneous items (appropriated 21 Stat. at L., p. 461)	300 00	800 00

JAS. GILFILLAN,

Treasurer United States, Commissioner of the Sinking Fund, District of Columbia.

SEPTEMBER 16, 1881.

REPORT OF THE AUDITOR AND COMPTROLLER.

OFFICE OF THE AUDITOR AND COMPTROLLER,
DISTRICT OF COLUMBIA,

November 1, 1881.

GENTLEMEN: I have the honor to submit the following report of receipts and expenditures of the District government for the fiscal year ending June 30, 1881.

The revenue of the District government, from all sources, during said time, was \$4,147,817.75, as follows:

Receipts from taxes, licenses, and miscellaneous sources on account of general expenses of the District of Columbia.....	\$1, 839, 775 19
Receipts from repayments to various appropriations on account of general expenses of the District of Columbia and water fund	4, 671 56
Receipts on account of water department	140, 331 59
Receipts on account of redemption of tax-lien certificates	2, 645 20
Receipts on account of redemption of special-tax scrip	14, 133 00
Receipts on account of Washington redemption fund	259 23
Receipts on account of paving Pennsylvania avenue, act July 8, 1870.	658 25
Receipts on account of repaving Pennsylvania avenue, act July 19, 1876.	622 55
Receipts from sale of property, act March 3, 1881	2, 294 52
Receipts from taxes erroneously collected	5, 801 42
Receipts from Congressional appropriations on account of general expenses of the District of Columbia, act June 4, 1880	1, 702, 628 67
Receipts on account of deficiency interest on 3.65 bonds, act January 31, 1881.....	81, 084 97
Receipts on account of additional policemen, act March 1, 1881	3, 238 50
Receipts on account of deficiencies 1880 and 1881, act March 3, 1881....	11, 558 70
Receipts on account of salary Engineer Commissioner, act March 3, 1881.	190 95
Receipts on account of payment of judgments, act March 3, 1881.....	15, 000 00
Receipts on account of filling grounds south of the Capitol, act January 27, 1881	20, 000 00
Balance on hand June 30th, 1880.....	302, 923 45
Total revenue.....	4, 147, 817 75

The expenditures by the District government during the same period were \$3,737,049.67, as follows:

Payments on account of general expenses of the District of Columbia:	
For improvement and repairs	\$482, 313 76
For institutions of charity, reformatories, &c	199, 712 60
For constructing, repairing, and maintaining bridges.....	11, 491 12
For engineering and maintaining Washington Aqueduct.....	20, 000 00
For salaries and contingent expenses of the offices of the District of Columbia	148, 642 48
For streets, District of Columbia	264, 686 66
For public schools, current expenses	409, 329 72
For erection of school buildings	117, 981 91
For Metropolitan police	307, 050 28
For fire department and alarm telegraph	106, 262 97
For courts	12, 197 27
For judicial expenses	2, 875 32
For judgments against the District of Columbia.....	54, 325 42
For markets	10, 519 25
For health department	26, 928 11
For interest and sinking fund	1, 317, 843 48
For miscellaneous and general contingent expenses of the District of Columbia.....	32, 449 66
For purchase of police-court building	20, 000 00
For claim of Thomas Lucas, act June 10, 1880	2, 741 89
Total payments on account of general expenses	3, 547, 351 90

For water department	\$140,738 74
For filling grounds south of Capitol	19,887 40
For refunding erroneously paid taxes	5,801 42
For redemption of special-tax scrip	16,342 88
For redemption of tax-lien certificates	2,080 42
For redemption of tax-sale certificates	661 17
For redemption of Pennsylvania avenue paving scrip, act July 19, 1876 ..	3,009 75
For redemption of Pennsylvania avenue paving scrip, act July 8, 1870 ..	1,175 99
Total expenditures during the fiscal year	3,737,049 67

RECAPITULATION.

Total receipts during the fiscal year	4,147,817 75
Total expenditures during the fiscal year	3,737,049 67

Balance in United States Treasury July 1, 1881	410,768 08
Subject to requisition and draft on account of general expenses of the District of Columbia:	
Appropriation, 1879	\$2,673 14
Appropriation, 1880	74,390 14
Appropriation, 1881	294,042 11
Appropriation, 1882	1,028 42
	<hr/>
On account of War Department	372,133 81
On account of redemption of Washington special-tax scrip	30,113 92
On account of Washington redemption fund	3,200 80
On account of redemption of tax-lien certificates)	292 75
On account of paving Pennsylvania avenue, act July 8, 1870	1,344 69
On account of repaving Pennsylvania avenue, act July 19, 1876	743 26
On account of filling grounds south of the Capitol:	174 93
Act February 4, 1880	\$43 44
Act April 4, 1878	5 08
Act July 10, 1879	14 23
Act January 27, 1881	113 85
	<hr/>
On account of general expenses, act March 3, 1875	176 60
On account of fire department, act June 22, 1874	292 31
On account of sales of property in Washington and Georgetown for police stations and fire-engine house, act March 3, 1881	49
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Total balance July 1, 1881	410,768 08

The treasurer of the District of Columbia has paid into the United States Treasury, as required by law, all moneys received by him during the fiscal year, and fully accounted for the same.

The number of audits made during the year was 5,167, and of checks drawn 21,660.

For a more detailed statement of receipts and expenditures, see accompanying exhibits, marked Appendix C 1 and Appendix C 2.

Respectfully submitted.

JOHN T. VINSON,

Auditor and Comptroller, District of Columbia.

HON. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

APPENDIX C 1.

RECEIPTS.

Statement by the auditor and comptroller of the cash receipts of the District of Columbia, as reported by the treasurer, from July 1, 1880, to June 30, 1881.

From whom and on what account received.	Detail.	Total.	Aggregate.
John F. Cook, collector:			
General fund, District of Columbia.....	\$1,790,551 12		
Street railroads, special deposits.....	8,295 83		
Water rents and tax.....	140,331 59		
Redemption tax-lien certificates (trust).....	2,645 20		
Redemption special-tax scrip (trust).....	14,133 00		
Washington redemption fund (trust).....	259 23		
Paving Pennsylvania avenue, act July 8, 1870 (trust).....	658 25		
Repaving Pennsylvania avenue, act July 19, 1876 (trust).....	622 55		
		\$1,952,496 77	
Northern market.....	5,178 79		
Eastern market.....	2,811 90		
Western market.....	4,436 32		
Georgetown market.....	1,512 76		
		13,939 77	
Fines, police court, &c.....	16,861 39		
Fines, criminal court.....	1,741 46		
		18,602 85	
Rent of District property.....	590 00		
Rent of District bay-scales.....	1,002 92		
Rent of fish-wharf, &c.....	837 49		
		2,430 41	
Interest on bonds (Washington school fund).....		2,576 96	
Bills receivable (Western market notes).....		3,429 83	
Washington Market Company (franchise rental).....		7,500 00	
Fees for building and repair permits.....		3,239 00	
Sale of old material.....	274 00		
Sale of confiscated butter by sealer of weights and measures.....	2 21		
		276 21	
Advertising sale for special assessments prior to 1878.....		309 21	
James S. Wilson, late treasurer District of Columbia.....		1,100 61	
W. H. Slater, late collector District of Columbia.....		160 56	
Balance from paving commission appointed under act of Congress, approved July 19, 1876.....		1,081 74	
Sale of Washington property, act March 3, 1881 (trust).....	2,189 52		
Sale of Georgetown property, act March 3, 1881 (trust).....	105 00		
		2,294 52	
Sale of alley in Washington, act March 3, 1881 (general fund).....		378 40	
Repayments to various appropriations and water fund.....		1,375 73	
Total receipts from taxes, revenues, trust funds, &c..			\$2,011,192 51
From Congressional appropriations:			
Act January 27, 1881, filling grounds south of the Capitol.....		20,000 00	
Act June 4, 1880, general expenses District of Columbia.....		1,702,628 67	
Act January 31, 1881, deficiency, interest on 3.65 bonds.....		81,084 97	
Act March 1, 1881, additional policemen.....		3,238 50	
Act March 3, 1881, deficiencies, 1880 and 1881.....		11,558 70	
Act March 3, 1881, salary Engineer Commissioner.....		190 95	
Act March 3, 1881, payment of judgments.....		15,000 00	
			1,833,701 79
Grand aggregate of receipts.....			3,844,894 30

JOHN T. VINSON,
Auditor and Comptroller District of Columbia.

AUDITOR AND COMPTROLLER'S OFFICE, D. C.,
Washington, November 25, 1881.

APPENDIX C 2.

EXPENDITURES.

Statement of the expenditures on account of the government of the District of Columbia from July 1, 1880, to June 30, 1881.

Title of accounts.	Detail.	Total.	Aggregate.	Grand aggregate.
IMPROVEMENTS AND REPAIRS.				
Repairs to concrete pavements, 1881	\$51,725 28			
Repairs to concrete pavements, 1880	122 28			
Total for concrete pavements		\$51,847 56		
Work on sundry streets and avenues and replacement of pavements, 1881	270,555 74			
Work on sundry avenues and streets and replacement of pavements, 1880	733 08			
Total for work on streets, &c		271,288 82		
Materials for permit work, 1881	19,710 95			
Materials for permit work, 1880	694 14			
Total for permit work		20,405 09		
Repairing and macadamizing Seventh street road, 1881		14,955 50		
Surveys of the District with reference to the future extension of avenues, 1881		4,988 34		
Work on New York avenue intercepting sewer, 1881		22,180 01		
Work on Boundary street auxiliary sewer, 1881	10,187 21			
Work on Boundary street auxiliary sewer, 1880	17,181 64			
Work on Boundary street auxiliary sewer, 1879	45,945 04			
Total for Boundary street sewer		73,313 89		
Lateral sewers, 1881	14,473 90			
Lateral sewers, 1880	5,423 95			
Total for lateral sewers		19,897 85		
Work on canal to deep water on the river front, 1881		3,436 70		
Aggregate for improvements, &c			\$482,313 76	
BRIDGES, CONSTRUCTING, REPAIRING, &c.				
Ordinary care, repairing, &c., of Benning's, Anacostia, and Chain bridges, &c., 1881		5,500 00		
Repairs to M street bridge, 1881		5,991 12		
Total for bridges			11,491 12	
CHARITIES AND CORRECTIONS.				
Washington Asylum:				
Compensation of employes, 1881	9,524 85			
Contingent expenses, 1881	27,996 87			
Contingent expenses, 1880	670 87			
Completion of south wing of new workhouse at Washington Asylum, 1881	9,964 46			
Total for Washington Asylum		48,157 05		
Georgetown Almshouse:				
Support of inmates, 1881	1,508 04			
Support of inmates, 1880	30 38			
Total for almshouse		1,538 42		
Government Hospital for the Insane:				
Support of indigent insane, 1881	37,000 00			
Support of indigent insane, 1880	4,785 98			
Total for hospital		41,785 98		
Reform School:				
Support of boys, 1881	27,722 52			
Support of boys, 1880	1,359 14			
Total for Reform School		29,081 66		
Transportation of paupers and conveying prisoners to workhouse, 1881	3,575 29			
Transportation of paupers and conveying prisoners to workhouse, 1880	131 80			
Total for transportation, &c		3,707 09		

40 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Statement of expenditures on account of government of District of Columbia, &c.—Cont'd

Title of accounts.	Detail.	Total.	Aggregate.	Grand aggregate.
Relief of the poor, 1881.....	\$9,865 25			
Relief of the poor, 1880.....	777 15			
Total for relief of the poor		\$10,642 40		
Payments to institutions:				
Columbia Hospital for Women and Lying-in Asylum, 1881	15,000 00			
Erection of cottages on grounds of the Columbia Hospital, &c., 1881	3,000 00			
Children's Hospital, 1881.....	5,000 00			
Saint Ann's Infant Asylum, 1881.....	5,000 00			
Industrial Home School, 1881	10,000 00			
National Association for Colored Women and Children, 1881.....	6,500 00			
Women's Christian Association, 1881	5,000 00			
Little Sisters of the Poor, 1881	5,000 00			
Erection of building for the German Orphan Asylum, 1881	10,000 00			
Penny Lunch House, 1879	300 00			
Total for payments to institutions		64,800 00		
Aggregate for charities and corrections.....			\$199,712 60	
WASHINGTON AQUEDUCT.				
Engineering and maintaining, 1881			20,000 00	
SALARIES AND CONTINGENT EXPENSES—OFFICES.				
Executive office:				
Compensation of employes, 1881.....	17,370 19			
Contingent expenses, 1881	2,152 47			
Contingent expenses, 1880	89 68			
Total for executive office		19,612 34		
Auditor and comptroller's office:				
Compensation of employes, 1881.....	12,400 00			
Contingent expenses, 1881	474 14			
Contingent expenses, 1880	41 78			
Total for auditor and comptroller's office		12,915 92		
Old records division:				
Compensation of employes, 1881.....		2,100 00		
Special-assessment division:				
Compensation of employes, 1881.....	4,200 00			
Contingent expenses, 1881	103 98			
Total for special-assessment division		4,303 98		
Treasurer and assessors' office:				
Compensation of employes, 1881.....	17,900 00			
Contingent expenses, 1881	1,995 96			
Contingent expenses, treasurer's office, 1880	94 32			
Contingent expenses, assessor's office, 1880	129 27			
Preparing map of county, showing subdivisions of real estate, 1881	1,000 96			
Total for treasurer and assessor's office		21,120 51		
Collector's office:				
Compensation of employes, 1881	9,000 00			
Contingent expenses, 1881	1,093 01			
Contingent expenses, 1880	548 91			
Total for collector's office		10,641 92		
Sinking-fund office:				
Compensation of employes, 1881.....	2,400 00			
Contingent expenses, 1881	97 65			
Contingent expenses, 1880	4 25			
Total for sinking-fund office		2,501 90		
Coroner's office:				
Compensation of coroner, 1881	1,800 00			
Contingent expenses, 1881	30 50			
Contingent expenses, 1880	186 21			
Contingent expenses, 1879	92 00			
Payment of coroner's jurors, 1881	495 00			
Total for coroner's office		2,603 71		
Attorney's office:				
Compensation of employes, 1881	7,997 00			
Contingent expenses, 1881	232 69			

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 41

Statement of expenditures on account of government of District of Columbia, &c.—Cont'd.

Title of accounts.	Detail.	Total.	Aggregate.	Grand aggregate.
Contingent expenses, 1880.....	\$49 51			
Rent of office, 1881.....	225 00			
Revision of laws, 1880.....	31 62			
Total for attorney's office.....		\$8,535 82		
Inspector of buildings' office:				
Compensation of employes, 1881.....	5,580 00			
Compensation of inspector of plumbing, 1881.....	450 00			
Contingent expenses, 1881.....	265 82			
Contingent expenses, 1880.....	138 04			
Total for inspector of buildings' office.....		6,433 96		
Division of property:				
Compensation of employes, 1881.....	11,168 10			
Rent of property yards, 1881.....	275 00			
Total for property division.....		11,441 10		
Engineer's office:				
Compensation of employes, 1881.....	28,806 35			
Contingent expenses, 1881.....	4,674 73			
Contingent expenses, 1880.....	619 51			
Total for engineer's office.....		34,100 59		
Sundries:				
Compensation of employes, division of streets, alleys, and roads, 1881.....	5,600 00			
Compensation of employes, office inspector of gas and meters, 1881.....	3,000 00			
Compensation of harbor-master, 1881.....	40 00			
Compensation of harbor-master, 1880.....	80 00			
Compensation of sealer of weights and measures, 1881.....	80 00			
Fuel, ice, gas, repairs, and miscellaneous expenses offices, 1881.....	3,185 99			
Fuel, ice, gas, repairs, and miscellaneous expenses office, 1880.....	344 74			
Total for sundries.....		12,330 73		
Aggregate for salaries and contingent expenses.....			\$148,642 48	
STREETS.				
Removal of garbage.....		10,323 09		
Cleaning, sprinkling, and sweeping streets and avenues, 1881.....	30,357 77			
Cleaning, sprinkling, and sweeping streets and avenues, 1880.....	2,625 00			
Total for cleaning streets, &c.....		33,282 77		
Cleaning alleys, 1881.....	5,542 61			
Cleaning alleys, 1880.....	462 23			
Total for cleaning alleys.....		6,004 84		
Current work of repairs to streets, alleys, and roads, 1881.....	60,290 30			
Current work of repairs to streets, alleys, and roads, 1880.....	772 94			
Total for current work, &c.....		70,063 24		
Parking commission:				
Compensation of employes, 1881.....	1,920 00			
Contingent expenses, 1881.....	13,322 46			
Contingent expenses, 1880.....	485 30			
Total for parking commission.....		15,727 76		
Cleaning tidal sewers, 1881.....	2,814 88			
Cleaning tidal sewers, 1880.....	5 45			
Total for cleaning tidal sewers.....		2,820 33		
Street lamps and gas:				
Illuminating materials, lighting, &c., 1881.....	107,229 36			
Illuminating materials, lighting, &c., 1880.....	11,678 04			
Repairs to lamps, 1881.....	822 71			
Repairs to lamps, 1880.....	38 61			
Erection of lamps, 1881.....	1,196 33			
Compensation of superintendent, 1881.....	900 00			
Lamps in alleys, and lighting same, 1881.....	1,593 32			
Total for lamps and gas.....		123,458 37		
Repairs to pumps, 1881.....		3,006 26		
Aggregate for streets.....			264,686 06	

42 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Statement of expenditures on account of government of District of Columbia, &c.—Cont'd.

Title of accounts.	Details.	Total.	Aggregate.	Grand aggregate.
PUBLIC SCHOOLS.				
Compensation of officers, teachers, and janitors, 1881		\$330, 343 18		
Rent of school buildings, including interest on Linthicum loan, \$2,400	\$28, 806 11			
Rent of school buildings, 1880	27 05			
Rent of school buildings, 1879	464 23			
Total for rent		29, 297 39		
Fuel for schools, 1881	12, 000 00			
Fuel for schools, 1880	172 29			
Total for fuel		12, 172 29		
Repairs to school buildings, 1881	14, 628 61			
Repairs to school buildings, 1880	756 82			
Total for repairs		15, 385 43		
Contingent expenses, 1881	20, 665 82			
Contingent expenses, 1880	1, 465 61			
Total for contingent expenses		22, 131 43		
Aggregate for current expenses of schools			\$409, 329 72	
ERECTION OF SCHOOL BUILDINGS.				
School buildings 2d division, 1881		85, 000 73		
School building in county, 1881		10, 000 00		
School building for colored schools, 1881		36, 258 16		
Force school building, 1880		17, 861 57		
Peabody school building, 1880		18, 861 45		
Aggregate for erection of school buildings			117, 981 91	
METROPOLITAN POLICE.				
Compensation of employes, 1881		284, 474 13		
Pay and equipment of 300 additional policemen, 1881		6, 444 28		
Rent of station-houses, 1881	5, 765 00			
Rent of station-houses, 1880	825 00			
Total for rent		6, 590 00		
Fuel for police stations, 1881		1, 274 28		
Repairs to station-houses, 1881	1, 079 20			
Repairs to station-houses, 1880	283 45			
Total for repairs		1, 362 65		
Contingent expenses, 1881	6, 459 31			
Contingent expenses, 1880	445 68			
Total for contingent expenses		6, 904 99		
Aggregate for police			307, 050 28	
FIRE DEPARTMENT AND ALARM.				
Compensation of employes, 1881	75, 740 00			
Compensation of two telegraph operators, 1880	400 00			
Total compensation		76, 140 00		
Repairs to engine-houses, 1881	900 51			
Repairs to engine-houses, 1880	25 50			
Total repairs to houses		926 01		
Fuel for department, 1881	972 38			
Fuel for department, 1880	210 00			
Total for fuel		1, 182 38		
Purchase of horses		2, 000 00		
Repairs to apparatus, 1881	3, 494 30			
Repairs to apparatus, 1880	475 00			
Total repairs to apparatus		3, 969 30		
Repairs to telegraph line, 1881		978 24		
Contingent expenses, 1881	19, 934 24			
Contingent expenses, 1880	1, 132 80			
Total contingent expenses		21, 067 04		
Aggregate for fire department			106, 262 97	

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 43

Statement of expenditures on account of government of District of Columbia, &c.—Cont'd.

Title of account.	Details.	Total.	Aggregate.	Grand aggregate.
COURTS AND JUDICIAL EXPENSES.				
Police court:				
Compensation of employes, 1881	\$9,318 00			
Marshal's fees, 1881	1,619 50			
Marshal's fees, 1880	87 00			
Contingent expenses, 1881	1,170 64			
Contingent expenses, 1880	2 13			
Total for police court		\$12,197 27		
Judicial expenses:				
Payment of witnesses, clerk's fees, &c., 1881	1,183 17			
Payment of witnesses, clerk's fees, &c., 1880	7 15			
Payment of costs in case of <i>Strong vs. District of Columbia</i> (deficiency), 1880	1,735 00			
Total for judicial expenses		2,875 32		
Aggregate for courts and judicial expenses			\$15,072 59	
PAYMENT OF JUDGMENTS.				
Judgments paid, 1882	13,971 58			
Judgments paid, 1881	2,579 55			
Judgments paid (deficiency), 1880	37,774 29			
Aggregate for judgments			54,325 42	
MARKETS.				
Compensation of market-masters, 1881	4,579 62			
Compensation of market-masters, 1880	484 60			
Total compensation		5,064 22		
Contingent expenses, 1881	4,383 17			
Contingent expenses, 1880	208 61			
Total for contingent expenses		4,591 78		
Rent of market sites, 1881	604 92			
Rent of market sites, 1880	258 33			
Total for rent		863 25		
Aggregate for markets			10,519 25	
HEALTH DEPARTMENT.				
Compensation of employes, 1881		21,338 50		
Contingent expenses, 1881	4,027 21			
Contingent expenses, 1880	169 14			
Total for contingent expenses		4,196 35		
Expenses provided for in deficiency bill, 1879		1,383 26		
Aggregate for health department			26,928 11	
INTEREST AND SINKING FUND.				
Payment of interest and sinking fund on the bonded debt of the District of Columbia			1,817,843 48	
MISCELLANEOUS EXPENSES.				
Hay-scales, repairs to, 1881		52 90		
Rent of District offices, 1881	3,600 00			
Rent of District offices, 1880	800 00			
Total for rent		3,900 00		
General advertising, 1881	4,078 16			
General advertising, 1880	158 45			
Total for advertising		4,236 61		
Removal of bodies from Holmead's cemetery, 1881		2,000 00		
Purchase of police-court building, 1881		20,000 00		
Amount due property owners for ground condemned, 1881		7,561 76		
General contingent expenses, D. C., 1881	9,255 74			
General contingent expenses, D. C., 1880	634 54			
Total for general contingent expenses		9,890 28		
Relief of Thomas Luane (act June 10, 1880)		2,741 89		

44 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Statement of expenditures on account of government of District of Columbia, &c.—Cont'd.

Title of accounts.	Detail.	Total.	Aggregate.	Grand aggregate.
Books for register of wills, printing checks, damages and miscellaneous expenses, 1881.....	\$4,612 26			
Books for register of wills, printing checks, damages, and miscellaneous expenses, 1880.....	196 85			
Total for books for register of wills, &c.....		\$4,808 11		
Aggregate for miscellaneous.....			\$55,191 55	
Grand aggregate of expenditures from appropriations for the District of Columbia.....				\$3,547,351 90
SPECIAL APPROPRIATIONS.				
Filling up, draining, and placing in good sanitary condition the grounds south of Capitol (Jan. 27, 1881).....	19,886 15			
Filling up, draining, &c., grounds south of Capitol (February 4, 1880).....	1 25			
Aggregate for special appropriations.....			19,887 40	
WATER DEPARTMENT.				
Compensation of employes in office.....		10,830 00		
Compensation of laborers.....		28,082 55		
Erection of stand-pipe.....		1,580 39		
Refunding erroneously paid water rent and taxes.....		290 24		
Interest and sinking fund on water-stock bonds (by regulation).....		74,123 77		
Contingent expenses.....		80,221 79		
Aggregate for water department.....			140,788 74	
SPECIAL AND TRUST FUNDS.				
Refunding erroneously paid taxes.....		5,801 42		
Redemption of special-tax scrip.....		16,342 88		
Redemption of tax-lien certificates.....		2,080 42		
Redemption of tax-sale certificates.....		661 17		
Redemption of Pennsylvania avenue paving scrip, act July 19, 1876.....		8,009 75		
Redemption of Pennsylvania avenue paving scrip, act July 8, 1870.....		1,175 99		
Aggregate for special accounts.....			29,071 63	
Grand aggregate of expenditures on account of special appropriations, water department and trust funds.....				189,697 77
Grand aggregate of expenditures on account of the government of the District of Columbia, for year ending June 30, 1881.....				3,737,049 67

JOHN T. VINSON,
Auditor and Comptroller, D. C.

AUDITOR AND COMPTROLLER'S OFFICE, D. C.,
Washington, August 19, 1881.

APPENDIX C 3.

ESTIMATES.

OFFICE OF THE AUDITOR AND COMPTROLLER,
DISTRICT OF COLUMBIA,
Washington, December 15, 1881.

GENTLEMEN: I have the honor to submit the following estimate of the expenses of this office for the fiscal year ending June 30, 1883:

One auditor and comptroller.....	\$3,000 00
One bookkeeper.....	1,800 00
One clerk.....	1,600 00
Three clerks, at \$1,400 each.....	4,200 00
One clerk.....	1,200 00
One messenger.....	600 00
Contingent expenses.....	500 00
	<hr/>
	\$12,900 00

Very respectfully, *

JOHN T. VINSON,
Auditor and Comptroller, District of Columbia.

HON. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

To amount penalty on taxes for year 1874, personal.....	2,408 18			2,408 18
To amount penalty on taxes for year 1875, real estate.....	10,213 75			10,213 75
To amount penalty on taxes for year 1876, personal.....	1,086 67			1,086 67
To amount penalty on taxes for year 1880, real estate.....	22,643 25			22,643 25
To amount penalty on taxes for year 1880, personal.....	4,728 37			4,728 37
To amount penalty on taxes for year 1881, real estate.....	9,644 71			9,644 71
To amount penalty on taxes for year 1881, personal.....	12 29			12 29
To amount penalty on Washington redemption fund.....	7,491 01			7,491 01
To amount penalty on special taxes, old corporation of Washington.....				
D. C.				
Penalty on Washington redemption fund.....	101,366 81			101,366 81
Account advertising tax arrears for the years 1875 to 1880, inclusive.....	1,561 79			1,561 79
Account Washington redemption fund, exclusive of penalty.....				
Account paying Pennsylvania avenue.....	246 94			246 94
Account special taxes, corporation of Washington, exclusive of penalty.....	1,280 80			1,280 80
Account licenses District of Columbia.....	7,473 96			7,473 96
Account dog tax.....	145,238 42			145,238 42
Account permit fees.....	3,336 32			3,336 32
Account certificates of taxes.....	992 75			992 75
Account auctioneers' returns on special sales.....	1,370 00			1,370 00
Account relaying pavement adjacent to railway tracks.....	155 76			155 76
Account material furnished plumbers.....	3,295 83			3,295 83
	226 63			226 63
	163,616 40			163,616 40
	583 16			583 16
	6 07			6 07
Total amount collected during the year ending June 30, 1881.....	140,331 29			140,331 29
By abatement allowed by law, on general tax 1881.....				
By allotment allowed by law, on personal tax 1881.....				
By cash paid treasurer District of Columbia by collector District Columbia, account of above.....				
By drawbacks deposited with treasurer District of Columbia by collector District of Columbia, account of above.....				
By tax-lien certificates deposited with treasurer District of Columbia by collector District Columbia, account of above.....				

Dr.	Cr.
	By paying stock deposited with treasurer District of Columbia by collector District of Columbia, account as above.....
	1,609 03
	Amount in full.....
	2,056,523 50
	By balance uncollected taxes, 1845 to 1881, real.....
	\$996,374 89
	By balance uncollected taxes, 1877 to 1881, personal.....
	202,803 06
Total.....	3,255,701 45
	3,255,701 45

RECAPITULATION.

Amount collected on account real estate tax, all years, during the years ending June 30, 1881.....	\$1,443,774 39
Amount collected on account personal tax, all years, during the year ending June 30, 1881.....	205,866 45
Amount collected on account water fund, all years, during the year ending June 30, 1881.....	140,331 59
Amount collected on account miscellaneous items received for collection, all years, during the year ending June 30, 1881.....	165,184 26
Amount collected on account penalties, all years, during the year ending June 30, 1881.....	101,366 81
To balance uncollected taxes remaining due July 1, 1881 (real estate tax, \$996,374.89; personal tax, \$202,803.06).....	\$2,056,523 50
	1,190,177 95
	\$3,255,701 45

PER CONTRA.

By cash deposited with the treasurer of the District of Columbia, as per vouchers.....	1,952,496 77
By drawbacks deposited with the treasurer of the District of Columbia, as per vouchers.....	60,067 31
By tax-lien certificates deposited with the treasurer of the District of Columbia, as per vouchers.....	1,021 86
By paying stock deposited with the treasurer of the District of Columbia, as per vouchers.....	1,609 03
By abatement allowed by law, 5 per cent., on general tax payments during the month of November, 1880.....	\$36,236 36
By abatement allowed by law, 5 per cent., on personal tax payments during the month of November, 1880.....	5,072 17
	41,308 53
By balance uncollected taxes, as shown above.....	2,056,523 50
	1,190,177 95
	3,255,701 45

The following items in the above exhibit of receipts were collected through this office for use of third parties holding the liens respecting the taxes:

Special taxes—principal, \$7,472.96; interest, \$7,491.01	\$14,963 97
Account general tax for the years ending June 30, 1872, and June 30, 1873, represented by tax-lien certificates, principal and interest	2,645 20
Account Washington redemption fund, principal and interest	259 23
Account relaying pavement adjacent to railway tracks	3,295 83
Account paving Pennsylvania avenue	1,280 80
Total	22,445 03

A large percentage of the personal-tax balance as originally charged against this office by the assessor of the District of Columbia has been discharged by revisionment and legal adjustment, so that the amount of said balance, as stated, is not real; and in this connection it is respectfully asked that this account may be audited, and a reliable debit balance charged against the collector; also, that the general tax balance as charged against this office may be subjected to the same audit and review with like object, for by act of Congress approved March 3, 1881, clearing titles of church and other property, and by other adjustments, the arrear balance with which the collector has been charged has been disturbed.

On the 30th day of June, 1880, it was, by order of the Commissioners of the District of Columbia, made the duty of the collector of taxes to review, collect, and account for all taxes assessed for special improvements. In accordance with this order there has been collected upon bills furnished by the special assessment division, in bonds, coupons (and their accrued interest), drawback certificates, and cash, and placed to the credit of the several enumerated accounts, and to the receiving officers, as directed by the Commissioners District of Columbia in subsequent orders, amounts as follows, viz:

General account (i. e., assessments for which no certificates had been issued at the time of their collection), principal only	\$172,082 65
Account of assessments, where certificates had been issued and held by the commissioner of the sinking fund of the District of Columbia, principal and interest	186,171 99

The above aggregate amounts of receipts on said respective accounts were severally deposited directly with the Treasurer of the United States, the amount received in drawback certificates, which was delivered, subsequently directed by the Commissioners District of Columbia, to the chief of the special assessment division."

Account of certificates held by third parties—First National Bank of New York and others, principal and interest	38,260 19
This amount so collected turned over to the chief of the special assessment division as directed by the Commissioners District of Columbia.)	
Account condemnation of alleys not represented by certificates held by the commissioner of the sinking fund of the District of Columbia	146 13
This amount so collected delivered to the treasurer of the District of Columbia as directed by the Commissioners District of Columbia.)	
Account costs attending advertising and sales of real estate to satisfy special assessments	372 34
The amounts so collected delivered to the treasurer of the District of Columbia, as directed by the Commissioners District of Columbia.)	
Total amount collected on account of special assessments	397,033 30

The order transferring the special assessment account to this office transferred John W. Clarke from the special assessment division, and by whose assistance this portion of the collection has been mainly made. The limited clerical force of this office renders it ineffective for any direct and relative duties appertaining to it, and imposes much

extra service on its employés. The restoration of the service of two clerks is therefore earnestly requested.

Respectfully submitted.

JOHN F. COOK,

Collector Taxes, District of Columbia.

HONORABLE COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

APPENDIX D 1.

ESTIMATES.

OFFICE OF COLLECTOR OF TAXES,
DISTRICT OF COLUMBIA,
Washington, September 24, 1881.

GENERAL: I have the honor to submit the following estimate of the expenses of this office for the fiscal year ending June 30, 1883:

SALARIES.

For collector of taxes, District of Columbia	\$4,000
For one clerk, as cashier	1,800
For one clerk, as bookkeeper	1,600
For one clerk, as entry-clerk	1,400
For one clerk, as assistant entry-clerk, &c	1,200
For one messenger	600
For contingent fund	1,500
	12,100

In the event of the bill-making duty being transferred from the office of the assessor, where this duty has been performed during so much of the current fiscal year as has elapsed, to this office, then the service of two additional clerks, at \$1,200 each, will be required, making an aggregate of fourteen thousand five hundred dollars, required for all expenses of this office.

Respectfully submitted.

JOHN F. COOK,

Collector of Taxes, District Columbia.

HON. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

E.—REPORT OF THE ASSESSOR.

ASSESSOR'S OFFICE, DISTRICT OF COLUMBIA,
September 10, 1881.

THE COMMISSIONERS OF THE DISTRICT OF COLUMBIA:

GENTLEMEN: I have the honor to make the following report of the transactions of the treasurer and assessor's office for the fiscal year ending June 30, 1881.

TREASURER'S BRANCH.

Receipts.

From tax collector:

For general and personal taxes, trust funds, &c	\$1,664,254	49
For licenses	145,238	42
For water fund	140,331	59
	1,949,824	50

From claim of District of Columbia vs. J. S. Wilson	\$1,100 61
From Washington Market Company	7,500 00
From school fund, interest	2,576 90
From Western Market, bonus notes	3,429 83
From rents, hay scales	1,002 92
From rents, fish wharves	839 49
From rents, all other	590 00
From Eastern Market	2,811 90
From Western Market	4,436 32
From Northern Market	5,178 79
From Georgetown Market	1,512 76
From assistant attorney, collections and fines	649 75
From police-court fines	16,160 64
From building permits	3,239 00
From sales of old material	277 21
From sales of real estate	2,672 92
From United States marshal's fees	1,741 46
From claim vs. W. Slater, in full	160 56
From miscellaneous items	361 81
From amount refunded by Pennsylvania avenue paving commission	1,081 74
From sundry repayments to appropriations	1,373 13
	<hr/>
	2,008,520 24
From collector for special railroad deposits	2,672 27
	<hr/>
Total	2,011,192 51

These receipts were paid into the United States Treasury, as the law required. Drawback certificates amounting to \$62,718.20 were received by the collector for arrears of taxes, as authorized by law, and were duly canceled, and one-half of this amount will be credited by the United States Treasury as revenue.

LICENSES

were issued during the year to the number of 4,065, amounting to \$145,239.42, which was paid in to the collector of taxes as follows:

By apothecaries	\$482 01
By auctioneers	1,353 78
By book agents	215 89
By bar-rooms	51,616 78
By banks and bankers	276 18
By brewers	247 92
By bill posters	20 00
By billiard tables	1,250 02
By commercial agents	38,023 54
By cattle brokers	260 00
By commission merchants	1,630 05
By claim agents	270 00
By dealers in junk	2,083 38
By dealers in ice	108 34
By dealers in old barrels	63 34
By dealers in liquor, wholesale	10,624 44
By entertainments	2,080 00
By hacks and vehicles	1,394 48
By hotels	2,139 59
By intelligence offices	25 00
By insurance agents	5,840 06
By livery stables	2,131 75
By manipulators of gas	832 25
By peddlers	842 88
By pawnbrokers	1,625 01
By photographers	435 01
By produce dealers	15,011 63
By restaurants	3,655 80
By sundries	99 29
By theaters	600 00
	<hr/>
	145,238 42

This amount exceeds the collections of last year by the sum of \$24,598.85; the total increase being \$33,712.32, principally from commercial agents, and the decrease, \$9,113.47, mainly from bar-rooms, and fully justifies my recommendation of last year for an additional inspector of licenses, and I am fully satisfied that a larger expenditure in this direction would greatly increase the revenue.

ASSESSMENT BRANCH.

Statement of the assessed value of the real estate of the District of Columbia on the 30th June, 1880, after the correction of the tax-books.

Washington:		
Taxable.....	\$77,256,610	
District of Columbia, property of.....	1,093,917	
Exempt from taxation.....	4,188,969	
United States, property of.....	80,201,104	
		\$162,740,620
Georgetown:		
Taxable.....	5,282,096	
District of Columbia, property of.....	118,850	
Exempt from taxation.....	349,152	
United States, property of.....	72,427	
		5,822,525
County:		
Taxable.....	6,414,372	
District of Columbia, property of.....	37,999	
Exempt from taxation.....	852,447	
United States, property of.....	3,142,586	
		10,447,398
Total in District of Columbia.....		179,010,543
Amount taxable:		
Washington City.....	77,256,610	
Georgetown.....	5,282,096	
County.....	6,414,372	
		88,953,078
To this add the value of new improvements not heretofore assessed, after deducting those which no longer exist:		
In Washington, 397 houses.....	1,336,500	
In Georgetown, 21 houses.....	49,350	
In county, 120 houses.....	139,470	
		1,525,320
		90,478,398

ALTERATIONS OF TAX-BOOKS.

Changes, property to taxable from exempt, &c.:		
In Washington.....	77,317	
In Georgetown.....	64,503	
In county.....	28,063	
		169,903
		90,308,495

The assessed value of taxable real estate in the District on the 30th of June, 1881, is \$90,308,495.

AMOUNT OF TAX FOR 1881-'82.

Washington City, \$78,515,793, at \$1.50.....	\$1,177,736	83
Georgetown, \$5,266,943, at \$1.50.....	79,004	15
County, \$2,053,894, at \$1.50.....	30,808	41
County (agricultural), \$4,471,865, at \$13.....	44,718	65
Total tax.....	1,332,268	04

PERSONAL TAX.

The personal tax books for previous years have been settled, except about \$1,000 to be collected. The amount unpaid for 1881 was \$3,071.77 on July 1, 1881. The delinquent personal tax bills could not have been collected in the usual way—that is, by waiting for delinquents to come to the office—and it required vigorous effort on the part of the collector, with the aid of this office, to arrive at the result obtained. The returns from intangible property are rapidly diminishing, owing to the investment in exempt bonds, and I beg to refer to my previous reports for recommendations on this subject, as well as to the mode of assessing, &c.

The assessment for 1882 on personal property is \$9,666,272, tax \$14,994.08.

COUNTY MAPS.

Mr. Carpenter has not yet finished his contract for the complete set of maps or plats of the county, but those which have been furnished bid fair to be of great use towards a complete assessment.

There will be some thirty plats, numbered from 1 upwards, beginning at the southwest or Mason's Island as No. 1, and I respectfully recommend that each plat be lithographed before being bound in book form. The cost would be about \$300 for 100 copies of each plat, and owners of property and real-estate agents would, in all probability, buy enough of them to reimburse the District for the outlay.

The placing of them in the hands of parties interested would lead to the correction of errors in the subdivisions of property.

This expenditure would be borne by the balance of the \$3,000 appropriation for maps.

NEW DISTRICT OFFICES.

A new building, erected for all the needs of the District, is very desirable for the protection of the records and the proper manipulation of the different departments of the service.

I submit herewith an estimate of the expenses of this office for the fiscal year ending June 30, 1883.

Very respectfully,

ROB. P. DODGE,
Assessor, District of Columbia.

APPENDIX E 1.

ESTIMATES.

ASSESSOR'S OFFICE,
Washington, D. C., September 10, 1881.

GENTLEMEN: I have the honor to submit the following estimate for the year 1882-'83:

Assessor	\$3,000
Assistant assessor	1,800
Chief clerk	1,800
Second clerk	1,600
Two clerks, at \$1,400 each	2,800
Four clerks, at \$1,200 each	4,800
One clerk	900
One messenger	600
Contingent expenses	700
	<hr/>
	18,000
For detection of frauds upon the revenue	5,000
	<hr/>
	23,000

If a new assessment is ordered next year, which I earnestly recommend, the force must be increased in some way in order to accomplish it.

Very respectfully,

ROB. P. DODGE,

Assessor.

Hon. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

F.—REPORT OF THE INSPECTOR OF BUILDINGS.

OFFICE OF THE INSPECTOR OF BUILDINGS,

Washington, D. C., September, 1881.

GENTLEMEN: I have the honor herewith to transmit my annual report, covering the transactions of this office since my last report, commencing on July 1, 1880, together with recommendations and estimates for the fiscal year 1881-'82:

Tabular statement of permits issued for buildings, &c., from July 1, 1880, to June 30, 1881, inclusive.

No.	Description.	Value.
556	New brick dwellings and stores.....	\$1, 534, 140
355	Brick repairs and additions.....	150, 625
53	Brick stables (private).....	25, 250
3	Brick livery-stables.....	7, 300
5	Brick churches.....	32, 200
1	Brick market-house.....	15, 000
2	Brick school-houses (private).....	10, 750
1	Brick orphan asylum.....	25, 000
1	Brick car-house.....	10, 000
6	Brick office buildings.....	22, 825
15	Brick workshope.....	24, 310
50	Frame dwellings.....	24, 495
464	Frame repairs.....	47, 203
2	Frame stables.....	280
142	Frame wood-sheds.....	6, 017
21	Removals of frame houses.....	1, 670
2	Greenhouses.....	4, 300
3	Boat-houses.....	330
3	Ovens.....	275
84	Awnings.....	
23	Vaults (being 339 linear feet).....	
1, 792 permits, at a total value of.....		1, 951, 970

The total revenue for the twelve months amounts to \$3,237.

By reference to the above statement it will be seen that the total number of new buildings erected in the cities of Washington and Georgetown during the year is 623, and 57 frame houses in the county, as against 625 and 55, respectively, during the year previous.

The character and value of the dwellings shows the same marked improvement as that of last year.

There have been served 47 notices for defective structures, all of which have in most cases been readily complied with.

There have been made 42 condemnations of structures as dangerous to life and limb, and the buildings have either been taken down or made safe under the direction of this office. There have been entered 76 complaints of defective and dangerous building, all of which have been examined and the defects remedied. I would here call your attention to the great necessity for additional assistance in the inspection of buildings. At present there is but one assistant on outside work, and my



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own time is mostly taken up in the office and in attending to the construction and repairs of District buildings. The building regulations make sufficient provision for proper construction, and under them the construction of buildings is greatly superior to what it was before they were established, but with at least 300 buildings, scattered over the entire city and county, in course of construction and repair during the building season, it is impossible for the office fully to examine and control the details of their construction.

There should be at least two more assistants, in order to properly inspect and control the work; and to be able to command the services of competent and experienced men, the salary should not be placed at less than \$1,200 per annum, which outlay, in my opinion, will well repay the public, not only in the strength of construction, but also as to safety against fire.

The building public are becoming more familiar with the requirements of the regulations, as shown in only 47 notices for violations having been served this year as against 103 the year previous.

The damages by the severe storm of June 27, while great as to the number of buildings, were, with a few exceptions, not individually serious, varying from \$25 to \$1,500 on private buildings, and principally from \$100 to \$200. There were damaged 175 private buildings, with a loss estimated at \$30,000; 6 public school buildings, at \$5,040; and City Hall, at \$1,900; or 182 buildings, at a total loss of \$36,940.

The accompanying map will show the course and extent of the storm. The damage cannot be charged to defective construction, as the most substantial buildings in the line of the storm shared the same fate as buildings of lighter construction.

DISTRICT BUILDINGS.

Public schools.

There have been repaired 85 school buildings, at an expenditure of \$14,987.46, apportioned in the seven divisions, as follows:

First division	\$2, 767 78
Second division	1, 223 65
Third division	1, 624 87
Fourth division	1, 122 02
Fifth division	910 40
Sixth division	1, 133 65
Seventh division	4, 379 10
Wages of foremen	632 00
Rent of wareroom and shops	144 00
Pay-rolls and items charged in general	1, 049 99
Total	14, 987 46

The appropriation for the year, being \$10,000 less than the year previous, was not sufficient to make all the needed repairs, and in several instances it was necessary to curtail the expenses as requested by the trustees in the several divisions in order to keep within the amount appropriated.

The appropriation for the year 1881-'82, being again reduced \$5,000, is inadequate, and will only allow such repairs as will make the building comfortable, and as the number of buildings is increasing and the exterior of several of the larger ones need repainting, the appropriation for the coming year should not be less than \$20,000.

There have been erected four public school-buildings, in accordance

with the act of June 4, 1880, appropriating \$100,000, divided as follows: Second division, \$45,000; seventh division, \$45,000; and for the sixth division (county), \$10,000.

The building in the second division was erected on square 446, on P street, between Sixth and Seventh streets, northwest, the land being the property of the District, and the expenditures made as follows:

Contract for building	\$44,000 00
Increasing foundation to stacks	70 00
Surveying lot	25 00
Printing specifications	9 73
Improving ventilations and building belfry	344 00
Windows in water-closets	24 00
Foreman's wages	516 00
	<hr/>
	44,988 73
Unexpended balance	11 27
	<hr/>
	45,000 00

The building in the seventh division was erected on the south end of square 359, bounded by Vermont avenue, Tenth, and U streets, northwest, and the expenditures made as follows:

For purchase of site	\$9,936 35
Contract for building	33,600 00
For printing specifications	11 31
For surveying lots	42 50
For extra depths in boiler-rooms	141 00
For enlarging coal vaults	167 20
For flooring the entire loft	170 00
For fire-proofing floors over boiler-rooms	65 00
For ornament on south pediment	34 50
For formen's wages	832 00
	<hr/>
	44,999 86
Unexpended balance	14
	<hr/>
	45,000 00

There was erected two buildings in the sixth division, a six-room building at Anacostia, and a two-room at Bladensburg road, but owing to the appropriation being limited, the two rooms on first floor of the Anacostia building were not finished.

The expenditures on the two buildings were made as follows:

Contract for Anacostia building	\$6,373 00
Printing specifications	7 98
Surveying sites	28 00
Site for Bladensburg school	500 00
Contract for the building	3,100 00
	<hr/>
	10,008 98
Deducted from final payment to contractors	8 98
	<hr/>
	10,000 00

The appropriations for the above four buildings being entirely exhausted in the purchase of sites and the erection of the buildings, it will be necessary to have an appropriation for inclosing the grounds, sodding, and paving, which is estimated to cost as follows:

For inclosing and improving grounds at P-street school	\$4,000 00
For inclosing and improving grounds at U-street school	4,610 95
For inclosing and improving grounds at Anacostia school	888 50
For inclosing and improving grounds at Bladensburg school	550 00
Also inclosing, &c., at the Force school, first division	2,410 00
	<hr/>
	12,459 45

I would also again call your attention to the necessity (as a sanitary measure) of excavating and underpinning and finishing the interior of the east half of the Wallach building, which I estimate will cost about \$4,500.

The act of March 3, 1881, appropriates \$104,000 for the erection of four buildings, as follows: \$96,000 for purchase of sites and erection of two buildings in the second division, and \$8,000 for two in the sixth (county). The law required the plans for these buildings to be furnished by the Architect of the Capitol, and approved by the board of trustees of public schools.

The plans and specifications were accordingly placed in my hands for construction, and proposals were at once advertised for. The result was that the bids all exceeded the appropriation after deducting cost of sites, and the building committee of the school board therefore authorized me to omit the steam heating, as it was an appendage, and make some minor changes and readvertise, which was done, and the bids came within the appropriations, leaving a small margin for contingencies that will necessarily arise during the process of the construction.

My reason for referring to these buildings in this report is that I wish to call your attention to the necessity for an additional appropriation, in order to place these buildings in a condition to be occupied, and for which I estimate as follows:

Steam-heating two buildings in second division	\$11,000 00
Inclosing and improving grounds at Tenth and H street school	1,297 50
Inclosing and improving grounds at First and Massachusetts avenue	2,825 00
	<hr/>
	15,122 50

The plans and specifications furnished for the two county schools resulted in bids far in excess of the appropriation, and the buildings were therefore reduced to one-story buildings, in place of two, by order of the building committee, which brought the second bidding within the amount available. These buildings will need water-closets and coal-houses, independent of inclosures and grading, which I estimate will cost \$400.

I have also estimated that it will require to inclose, terrace, and fit up grounds surrounding the new high-school building the sum of \$3,119.40.

Police stations.

The third, fourth, and eighth precinct station-houses, owned by the District, have been greatly improved and put in good condition during the past year; but the rented buildings are not in proper condition for the comfort of the officers or safety and comfort of the prisoners, the owners not being willing to spend the sum necessary. Those buildings have only received such minor interior repairs as were absolutely necessary to keep them in a sanitary condition. In view of the fact that only by having the buildings owned by the District can they be made properly arranged and adapted for the purpose, I would urge that as soon as practicable there be erected suitable buildings to take the place of the five rented stations. The amount expended for repairs to station-houses and police headquarters during the year through this office is \$1,177.50.

As the police court needs some extensive repairs, I would recommend that an appropriation of \$2,500 be asked for, for the next fiscal year, for the repairs of police stations, police headquarters, and police court.

Engine-houses.

The engine-houses of the District are, with the exception of Nos. 4 and 5, in a good state of repair. No. 4, with an expenditure of \$400 in

addition to the repairs recently done, will place it in a condition which will compare favorably with the other houses.

No. 5, in Georgetown, is in my opinion, not worth repairing, being in a dilapidated condition and unfit for the purpose.

I would therefore call your attention to the great necessity for a new building, and recommend that the old town-house on Bridge street, belonging to the District, be reconstructed for that purpose. Its position is well adapted and it can be made an engine-house at far less expense than building a new one on a new site.

The repairs to engine-houses done through this office amounts to \$416.65.

To put No. 4 in a proper condition and keep the others in good repair will require an appropriation of \$1,500.

Market-houses.

The market-houses now owned by the District have been put in a good state of repair during the year, the amount expended through this office being \$2,886.05, and it will but require an appropriation for the next fiscal year of \$1,000.

Workhouse and Washington Asylum.

The act of June 4, 1880, appropriated the sum of \$10,000 for the erection of the south wing to the workhouse; the building was continued upon the original plan, with the exception of strengthening the interior construction, and was built by contract for the sum of \$9,941.86 and \$22.60 for extra paving, leaving an unexpended balance of \$35.54.

The repairs done through this office to the Workhouse and Asylum amounts to but \$194.50, owing to most of the work of repairs having been done by convict labor under the supervision of the intendant.

In conclusion, permit me, gentlemen, to acknowledge the uniform confidence and courtesy which this department has received from you in all its transaction.

Very respectfully,

THOS. B. ENTWISLE,
Inspector of Buildings.

Hon. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

APPENDIX F 1.

ESTIMATES.

OFFICE OF THE INSPECTOR OF BUILDINGS, DISTRICT OF COLUMBIA, Washington, September 9, 1881.

GENTLEMEN: I have the honor to transmit estimates for this office for the fiscal year 1882-'83 as follows:

Office expenses:

Salary of inspector of buildings	\$2,400 00
Salary of first assistant and draughtsman	1,700 00
Salary of second assistant (on school buildings)	1,200 00
Salary of third assistant	1,000 00
Salary of one messenger	480 00
Contingen expenses, including books, blanks, stationery, repairs to wagon, and miscellaneous items	500 00
	<hr/>
	\$7,280 00
	<hr/>

Repairs to market-houses	\$1,000 00
Repairs to police stations and police court	2,500 00
Repairs to work and alms house	1,000 00
Repairs to engine-houses	1,500 00
Repairs to school-houses	20,000 00
Excavating and underpinning east half of Wallach school	4,500 00
Inclosing and improving ground at Force school (coping, fences, sodding, and graveling)	2,410 00
Inclosing and improving grounds at P street and high school (coping, fences, sodding, and graveling)	7,119 40
Inclosing and improving grounds at Tenth street school (coping, sodding, and graveling)	4,610 95
Inclosing and improving grounds at First and Massachusetts avenue school (coping, fences, and sodding)	2,825 00
Steam-heating same	5,500 00
Inclosing and improving grounds at Tenth and H street school (coping, fences, and sodding)	1,297 50
Steam-heating same	5,500 00
Inclosing and improving grounds at Anacostia school	888 50
Inclosing and improving grounds at Bladensburg road school	550 00

Very respectfully,

THOS. B. ENTWISLE,
Inspector of Buildings.

HON. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

G.—REPORT OF THE FIRE COMMISSIONERS.

OFFICE OF THE BOARD OF FIRE COMMISSIONERS,
DISTRICT OF COLUMBIA,
Washington, D. C., September 5, 1881.

GENTLEMEN: We have the honor to submit herewith the following statement of the transactions of the fire department of the District of Columbia for the fiscal year ending June 30, 1881, an estimate of the expenses of said department for the fiscal year ending June 30, 1883, and such suggestions and recommendations as are, in our opinion, essential to further increase the efficiency of the fire suppression service.

BUILDINGS.

The buildings and rooms occupied by the department are the same as at the time of the last report, and are as follows: office of Board of Commissioners and Chief Engineer, room 26, Columbia building; central office fire-alarm telegraph, corner Pennsylvania avenue and Fourth-and-a-half street, northwest; six fire-engine houses and two truck-houses. The chief engineer in his accompanying report again calls attention to the necessity for the erection of new houses for No. 4 and No. 5 engine companies, and the organization of a new engine company in the northern section of the city. His recommendations in that connection are based upon valid grounds and are heartily concurred in by the board. In regard to No. 5 house, we earnestly recommend that unless it can be sold speedily for enough to build a new house in a more suitable location, as authorized by Congress, that you will press upon that body at the next session the necessity for such further legislation as may be needed to enable you to build the new engine-house west of Rock Creek, at the earliest possible date. If the new house for No. 4 company is erected, the present structure can be utilized for other public purposes, as suggested by the chief engineer in his report.

APPARATUS.

With the exception of the three Amoskeag engines and the old truck, the apparatus is in good condition. The old truck will be rebuilt during the current year, and the recommendations of the chief that the three engines named be exchanged for new ones is approved. These engines have been in service a long time; they necessarily often need repair and should be replaced by new ones as a matter of economy as well as safety.

HORSES.

The horses purchased during the past year were good ones, but from various causes we have now fewer animals than are essential for the proper conduct of that branch of the service. To prevent creating a deficiency, an effort will be made to get through the current year with the amount appropriated, but the larger sum asked next year will be necessary and should be granted.

FIRE-ALARM TELEGRAPH AND TELEPHONE SERVICE.

This branch of the service is in excellent condition, but still needs certain additions and improvements, as will be seen by the report of the superintendent. His recommendations for new boxes and increased help are approved, as they are absolutely necessary.

FIRE-PLUGS.

Special attention is invited to that portion of the chief engineer's report which treats of the water supply. His suggestions in regard to the erection of new and altering of old fire-plugs, the increase in the size of mains, and the construction of cisterns are timely and should receive careful consideration.

EXPENDITURES AND ESTIMATES.

The books of the auditor of the District of Columbia show the expenditures on account of the fire department for the fiscal year ending June 30, 1881, to have aggregated \$106,262.97, which leaves a small deficiency.

The estimates of the chief engineer and superintendent of fire-alarm telegraph for the next fiscal year aggregate \$113,370.00. This is a larger amount than was allowed last year, but the figures represent exactly the sum needed and should be allowed in order to avoid a deficiency. In addition to the ordinary expenses they estimate for certain much needed improvements and additions, and with the knowledge that the present department is numerically too small to cope with an extensive fire, or two large ones occurring at the same time, we would fail in our duty to the community if we did not second their reasonable requests. According to the last report of the assessor and treasurer, the buildings in the District are assessed at nearly \$100,000,000; add to this the money value of the furniture, merchandise, and other personal property contained in them, and it will hardly need the testimony of the expert fireman to prove that the present force is totally inadequate for the proper protection of such vast interests. It is true that during the past year the losses have been exceptionally small, but it is also true that we are liable at any time to have an extensive conflagration such as has visited other cities. There is always a possibility of a large fire, and we should be prepared to master it if it should unfortunately occur. It is

certainly better to expend a small additional sum per annum in strengthening the department than to be compelled to record a loss of property amounting to hundreds of thousands of dollars.

DEFICIENCY.

For the first time this board is compelled to ask for an appropriation to cover a deficiency, which is placed in the estimate at \$3,800. This is through no fault of ours, but is the result of entirely unforeseen causes. As is known, the estimates and appropriations are made more than one year in advance and are in detail. It so happened that the estimates for feed for the current year were based upon the prices paid the preceding year; but an unexpected rise in the price of forage leaves but money enough to the credit of that particular fund to purchase supplies for six or seven months. For this reason it is necessary that the sum asked should be appropriated to supply the deficiency and be made available at once.

DISABLED FIREMEN.

We again call your attention to the propriety of making some suitable provision for the relief of men disabled in the fire department. The service is attended with many risks by accident and exposure, and it is only just that when men are thus broken in health and incapacitated for physical labor, they should be retired to some lighter duty under the government, or placed on the retired list with a moderate salary. There are now several men on our rolls who are really unable to perform the active duties of the position, but they are retained because it would be a great hardship to discharge them after they have become thus broken down in health in the performance of duty.

PERSONNEL OF THE FORCE.

The efficiency of the District fire department is best shown by comparing its strength, the value of property to be protected, and the loss by fire, with the same statistics in other cities. The showing thus made is very favorable to this department. Much of its success in fighting fire is due to the personal character of the force, the result of careful selection of the men, and their appointment during good behavior. Charges against the men for serious breach of the regulations are comparatively infrequent. The executive ability of Chief Engineer Cronin has brought the discipline of the force to a point as nearly approaching military strictness as is advisable with a civil organization, while his good judgment and varied experience in the suppression of fires enables him to direct their operations with a gratifying degree of success. He is ably seconded by his assistant, Col. W. O. Drew. Their efforts would not, however, always avail if it was not for the saving of valuable time by the prompt signaling of alarms and the prompt movement of the force in response. The fire-alarm telegraph, under the intelligent supervision of Superintendent Miles, works admirably, and has been the means of saving large amounts of property. The system should be extended to keep pace with the growth of the city.

We are, with great respect, gentlemen, your obedient servants,
 W. R. COLLINS,
 PETER F. BACON,
 THOMAS L. HUME,
Fire Commissioners.

HON. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

62 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Estimates for expenses of fire department for year ending June 30, 1883.

SALARIES.

Two commissioners, at \$200.....	\$400 00
One commissioner and secretary, at \$400	400 00
One chief engineer, at \$1,800	1,800 00
One assistant chief engineer, at \$1,400	1,400 00
Eight foremen, at \$1,000	8,000 00
Six engineers, at \$1,000	6,000 00
Eight hostlers, at \$800	6,400 00
Six firemen, at \$800	4,800 00
Two tillermen, at \$800	1,600 00
Fifty-four privates, at \$720	38,880 00
Three watchmen, at \$720	2,160 00
One superintendent fire alarm, at \$1,500	1,500 00
Two operators fire alarm, at \$1,200	2,400 00

75,740 00

MISCELLANEOUS.

Repairs to apparatus	4,000 00
Repairs to houses (incidental)	1,500 00
Forage	7,000 00
Purchase of hose	3,000 00
Fuel	1,500 00
Purchase of horses	2,500 00
General and miscellaneous supplies of all kinds	13,000 00
Exchanging three Amoskeag engines for new	9,000 00
Purchase of lots and building and furnishing houses for No. 4 and No. 5 companies	20,000 00
Contingent expenses and supplies fire-alarm telegraph	5,130 00

EXTRAORDINARY.

Purchase of lot and erection and furnishing of house in northern section of city	10,000 00
Salaries for new company:	
One foreman	1,000 00
One engineer	1,000 00
One fireman	800 00
One hostler	800 00
Six privates	4,320 00
Deficiency for years ending June 30, 1881, and June 30, 1882:	
For feed and miscellaneous, year ending June 30, 1881	800 00
For feed and miscellaneous, year ending June 30, 1882	3,000 00
Estimates for extraordinary expenses of fire-alarm telegraph for year ending June 30, 1883:	
Seventy-five additional boxes and putting up same	15,000 00
Salary additional operator	1,200 00
Salary two repairmen, at \$720	1,440 00

APPENDIX G 1.

REPORT OF THE CHIEF ENGINEER.

OFFICE OF CHIEF ENGINEER, FIRE DEPARTMENT,
DISTRICT OF COLUMBIA,
Washington, September 8, 1881.

GENTLEMEN: I have the honor to submit herewith a report of the workings of the fire department from July 1, 1880, to June 30, 1881, a detailed statement of the number of fires during that period, a roster of members, an inventory of the property of each company, estimates for the expenses of the department for the fiscal year ending June 30, 1883, and certain suggestions and recommendations that are, in my judgment, necessary to further increase its efficiency.

MEMBERSHIP.

The department as at present constituted is composed of 95 officers and members, divided as follows: Three commissioners, one chief engineer, one assistant chief engineer, eight foremen, six engineers, two tillermen, six firemen, eight hostlers, fifty-four privates, three watchmen, one superintendent of fire-alarm telegraph, two operators of fire-alarm telegraph.

HOUSES.

The houses are eight in number, and six of them are in good condition, and will only need the usual incidental repairs. No. 4, located on Virginia avenue, between Fourth-and-a-half and Sixth streets southwest, which was never fitted for the purpose, either by location or construction, should be diverted to some other purpose, and a new and improved house erected on a more suitable site. The rear portion of the property on which it is at present located is used as a stable for all the horses (other than fire department) belonging to the District, under the control of the superintendent of property, and it is suggested the building may be used by that branch of the service as a storehouse, or together with the lot be sold, and the proceeds applied toward the erection of the new house. The house of No. 5 company, located on High near Bridge street, West Washington, is not only very dilapidated, but absolutely unsafe. During the last session of Congress a bill was passed authorizing the sale of certain District property in Georgetown, and directing that the proceeds therefrom should be applied to the purchase of a site, and the erection and furnishing of a new house for No. 5 company. In accordance with the terms of the act, the property was offered at public auction, but the Commissioners of the District deeming the amounts bid too small, the sale was not consummated, and as a consequence the company are still in their old tumble-down and totally inadequate quarters. In view of this fact, I again urge that an appropriation be made which shall be available at once for this purpose. No. 5 is the only company located in West Washington, and the people of that portion of the District have a right to demand that it shall be properly accommodated.

As has been stated in previous reports, a new house—and company—is an absolute necessity in the northern section of the city, and I most respectfully urge that the proper steps for the erection of one be taken immediately.

APPARATUS.

The apparatus on hand consists of eight engines, eight hose-carriages, three hook-and-ladder trucks, and one fuel wagon. Five of the engines are in good and three in fair order. The hose-carriages are all in good condition, and two of the trucks, with ordinary repairs, will last for several years. The fuel wagon is new. The three Amoskeag engines, rated as fair, have been in service since the organization of the department, fifteen years ago, and, as a matter of economy as well as safety, I earnestly renew my recommendation of last year, that they be exchanged for new ones. The third truck is very much out of repair, but will be rebuilt during the year, an appropriation having been made for that purpose.

HOSE.

There is now in the department 12,600 feet of fabric hose in good, 1,300 feet in fair, and 3,500 feet in bad or unserviceable condition.

There are also 400 feet of worn-out leather hose. As the average duration of hose is between three and four years, and as it is necessary there should be no lack of this article, we are required to purchase each year a sufficient quantity to keep the companies well supplied, and also to make good any extraordinary deficiency which may occur.

HORSES.

There are now in the department thirty-five horses, of which thirty-two are in active service. During the year eight worn-out condemned animals were exchanged for three good ones, and eight new ones were purchased. On account of the severe weather and heavy snow in December, 1880, it became necessary to secure additional horses, and accordingly eight were hired for a period of over a month. During that time they were, of course, housed and fed in the engine-houses, and as a consequence the feed item, for which the original appropriation proved to be too small, was considerably increased. For this and for the hire of the animals, paid out of the very small contingent fund, a deficiency appropriation is asked. The usual appropriation for the purchase of new horses is asked, as it is absolutely necessary that there should not only be a full quota of serviceable animals to each company, but also a fair supply of extra ones for use in the emergencies which are so sure to occur in this service.

WATER SUPPLY.

Without a proper and ample supply of water the best drilled and equipped department in the world is powerless, and I again call your attention to the fact that, in the event of a large fire in the business section of the city, the water supply or water fixtures are not sufficient to work the full force of the department. This is a most important subject, and while in the past the city has been so fortunate as to avoid a large conflagration, there can be no guarantee of continued immunity in that direction. Buildings, large, costly, and imposing, are being erected at the rate of over \$1,000,000 per annum, but neither the fire nor water service is permitted to keep pace with individual progress. As a consequence there is continuous danger of heavy losses, which could and should be averted by sufficient expenditures for the proper safeguards against fires, which every property holder has a right to expect. As I stated in my last report, it is useless to ask for the erection of additional fire-plugs along the line of the 4 or 6-inch water mains, for those now upon such lines cannot supply sufficient water for several engines working at a high pressure. For this reason I again urge the laying of larger mains, and the construction of a number of new cisterns in various sections of the city. The cisterns can be constructed at comparatively small cost, and the advantages to be derived in case of need will be great. In addition—and this should be done at once—all the old 9-inch outlet plugs should be changed to 10-inch, as this would insure uniformity and in many instances secure a larger flow of water, and also save time, that important factor at fires. If there be a special point in the District which need, attention in this matter of water supply it is in the vicinity of the Government Printing Office, a building which, in addition to the hosts of persons who are employed there day and night, contains so much valuable property. A large portion of this building is old, illy constructed, and, although crowded with inflammable material, was built without any regard to safety from fire. In its vicinity there are but few plugs, and they are on small mains. I beg that a 12 or 20

inch main be placed around the building, additional plugs erected, and that at least two cisterns be constructed in that locality, for besides the Printing Office there are in that neighborhood several hundred buildings erected in rows, many of them without even brick partition walls, and all liable to rapid destruction in the event of a fire without a full supply of water.

FIRE-ESCAPES.

Under the existing building regulations, which are supposed to have all the force and effect of law, the inspector of buildings is required to inspect all buildings "occupied as a hotel, boarding or lodging house, factory, mill or manufactory, or for offices or workshops in which persons are employed above the second story, and if in his opinion such building is not provided with proper facilities for the escape of persons in case of fire, he shall immediately serve a notice in writing upon the owner or owners, agent or other party or parties having an interest in said building, requiring the necessary additional facilities to be provided without delay"; said notice is subject to an appeal provided by the regulations.

I regret to say this rule has not been generally observed, and that, with but few exceptions, the large buildings are without the necessary means for escape in the event of a fire. I urge that stringent measures be adopted to enforce a proper compliance with this very essential portion of the law. I renew my recommendation of last year, that in addition to fire-escapes on all the hotels and government buildings and places of amusement in the city, iron ladders reaching from the ground to the roof be erected and kept in position at all times, thus providing a mode of reaching or escaping from the roof in time of fire. Such ladders could be placed against inside or court-yard walls of the public buildings, and in the others suitable places could be found so as not to mar the appearance of the building. I notice that many of the merchants have been permitted to erect upon the tops of their buildings large sign-boards, mostly of wood. This is a most dangerous practice, for in the event of a large fire they are liable to be lifted by the heat and in a burning condition carried squares distant, to the imminent danger of other property. Further than this, in the business portion of the city all large mercantile houses should be furnished with iron shutters.

FIRES AND LOSSES.

An accompanying table, marked A, shows that during the year ending June 30, 1881, there were 107 alarms, of which 97 were for actual fires, 2 chimneys on fire, and 8 false alarms. The actual fires involved an alleged loss of \$38,920, with an insurance of \$28,700. Table B shows the number of fires and the amount of losses from the organization of the department to date. By reference to it, it will be seen that the losses for 1881 were \$94,530, less than for 1880, and \$76,173, less than the average for the past ten years.

CONCLUSION.

During the year the conduct of the men has been gratifying, the breaches of discipline few, and attention to duty, noticeably on the fire ground, all that could be expected. In conclusion, I beg leave to return thanks to Assistant Chief Engineer Col. Wm. O. Drew for his valuable co-operation, to the Commissioners of the District of Columbia, the

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Major and superintendent and members of the Metropolitan police, the water registrar, superintendent of fire-alarm telegraph, and to your honorable body, for the willing aid each in their respective capacities have rendered me in the discharge of the important duties intrusted to me.

Very respectfully,

MARTIN CRONIN,
Chief Engineer.

The BOARD OF FIRE COMMISSIONERS,
District of Columbia.

Estimates for fire department for year ending June 30, 1883.

SALARIES.

Two commissioners, at \$200.....	\$400 00
One commissioner and secretary, at \$400	400 00
One chief engineer	1,800 00
One assistant chief engineer	1,400 00
Eight foremen, at \$1,000.....	8,000 00
Six engineers, at \$1,000.....	6,000 00
Eight hostlers, at \$500.....	6,400 00
Six firemen, at \$800	4,800 00
Two tillermen, at \$800	1,600 00
Fifty-four privates, at \$720	38,880 00
Three watchmen, at \$720	2,160 00
	71,840 00

MISCELLANEOUS.

Repairs to apparatus	\$4,000 00
Repairs to houses (incidental)	1,500 00
Forage.....	7,000 00
Hose	3,000 00
Fuel.....	1,500 00
Horses.....	2,500 00
Miscellaneous expenses and supplies of all kinds.....	13,000 00
	32,500 00

EXTRAORDINARY ESTIMATE.

Exchanging three Amoskeag engines.....	\$9,000 00
Purchase of lots and building and furnishing houses for No. 4 and No. 5 companies	20,000 00
Purchase of lot and erection of house in northern section of city.....	10,000 00
Salaries of officers and men for new company in northern section of city...	7,920 00
	46,920 00

DEFICIENCY ESTIMATES.

For forage and miscellaneous for year ending June 30, 1881	\$800 00
For forage and miscellaneous for year ending June 30, 1882	3,000 00
	3,800 00

APPENDIX G 2.

INVENTORY OF COMPANIES.

Inventory of stock and fixtures of Engine Company No. 1, up to July 1, 1881.

MARTIN CRONIN, Esq.,

Chief Engineer District of Columbia Fire Department:

SIR: I most respectfully submit the following list of property of No. 1 Engine Company.

JOS. PARRIS, *Foreman.*

One two-story brick house, with hose tower and stable attached, located on K street, between Sixteenth and Seventeenth streets, northwest.

SITTING-ROOM.

1 writing-desk.	1 checker-board.
1 stove and pipe.	2 rugs.
1 carpet.	1 coal-hod.
1 looking-glass.	1 floor-mat.
1 clock.	18 yards of linolia.
1 table and cover.	1 old sofa.
4 department pictures.	1 chandelier and globes.
1 small round table.	6 arm-chairs.
1 book-case.	

BED-ROOM.

1 carpet.	10 feather pillows.
10 iron bedsteads.	1 alarm-gong.
14 spittoons.	1 door-mat.
1 dust-brush and pan.	1 feather duster.
9 old bed-blankets.	2 dust-brushes, long handle.
10 old plain chairs.	1 dust-brush.
25 sheets.	1 stair-carpet.
25 pillow-slips.	1 looking-glass in bath-room.
10 towels.	1 piece of oilcloth in bath-room.
20 white bedspreads.	1 comb and brush.
10 new shuck and hair mattresses.	1 chandelier and globes.
3 old spreads.	

ENGINE DEPARTMENT.

1 second-class Clapp & Jones steam-engine, complete and in fair condition.	1 cold-chisel.
2 lamps.	1 poker.
2 monkey-wrenches.	1 Bashor coil-heater.
1 screw-jack.	1 vise.
3 oil-cans.	5 tons splint coal.
2 new canvas suction sleeves.	2 tons heater coal.
1 shovel.	2 coal-hods.
6 assorted files.	4 spanners.

ADJOINING ROOM.

2 arm-chairs.	3 spittoons.
1 looking-glass.	3 old window-shades.
1 coal-hod.	1 old pine-table.
4 department pictures.	1 stove and pipe.
3 door-mats.	1 coal shovel.
1 telephone.	1 old comb and brush.

HOSE-CARRIAGE DEPARTMENT.

1 hose-carriage, complete.	1 new reflector.
1 gum bucket.	1 old reflector.
2 200 feet of canvas hose, in good condition.	1 extra hose-carriage pole.
1 450 feet not, reliable.	2 Jones' couplings.
100 feet of life-line.	1 pipe-holder.
100 feet of picket rope.	2 brass play-pipes.
2 Johnson pumps.	1 prunty cut-off nozzle.
1 smoke respirator.	1 prunty strap.
	6 plain nozzles.

HOSTLER DEPARTMENT.

3 horses, in good condition.	1 clipping machine, in good condition.
1 horse, in fair condition.	2 clipping machines, in bad condition.
4 sets of swinging harness, in good condition.	1 pair of scissors.
4 sets of plain, in fair condition.	2 old clipping machines, combs.
1 Dutch collar.	2 curry-combs.
4 extra set reins.	2 horse-brushes.
4 extra old collars.	2 mane-brushes.
2 pitchforks.	2 mane-combs.
1 scoop-shovel.	2 pad riding saddles.
2 old brooms.	4 hand-holds.
	4 hitching-straps.

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3 head-halters.	20 bushels of oats.
4 horse-blankets, in good condition.	50 lbs. of hay.
2 old horse-blankets, in bad condition.	25 lbs. of straw.
4 horse-buckets.	1 old hay-cutter.
4 extra pole-straps.	1½ bushels flaxseed, meal.
2 sweat-scrapers.	1 bucket.

STOCK ON HAND IN STORE-HOUSE.

21 corn brooms.	2 cans of hoof ointment.
2 dust-brushes.	1 soldering-iron.
1 stove-brush.	1 bar of solder.
2 stove-shovels.	1 watering-pot.
1 dirt-shovel.	1 pair of tinner's snips.
3 scrub-brushes.	1 pound of copper rivets.
2 cotton mops.	1 hand-saw.
1 feather duster.	2 extra whips.
2 papers lampblack.	12 bullwink snap.
½ gallon of raw oil.	½ gross of matches.
2 new pitchforks.	24 papers of tripoli.
5 pounds of oxalic acid.	24 sheets emery cloth.
6 boxes of shoe-black.	24 sheets of crocus cloth.
5 pounds of glue.	6 sheets of sand-paper.
5 pounds of vaseline.	20 pounds of brown soap.
15 pounds kalsomine.	4 bars of castile soap.
3 chandelier globes, lamp globes.	20 pounds of assorted nails.
1 quart hard-oil finish.	6 pieces of harness soap.
1 small pickax.	3 gallons of tincture of arnica.
3 old steam-gauges.	10 pounds of sponge.
3 horse-brushes.	10 pounds of cotton waste.
4 curry-combs.	10 chamois skins.
1 scoop-shovel.	½ gallon of castor oil.
2 new bridles, bits.	6 lamp-wicks.
1 reflector.	2 horse-buckets.
2 Oyston spray nozzles.	1 brick-hammer.
2 extra reducers.	6 hame-straps.
2 Jones reducers.	1 stable-broom.
15 pounds white lead.	20 pounds of axle-grease.
2 cans of harness-oil.	6 old paint-brushes.
2 cans of harness-dress.	½ gallon turpentine.
6 screw-eyes.	2 kalsomine brushes.

MISCELLANEOUS.

300 bricks.	116 feet ladder.
175 feet of joist.	2 step-ladders.
100 laths.	2 old iron bedsteads.
2 trussels.	2 old play-pipes.
1 wheelbarrow.	3 old plain nozzles.
1 old shovel.	6 old files.
½ barrel of hose-oil.	1 old hose-carriage.
1 old hose-oiler.	1 jack; lot of old rope.
6 old shuck and hair mattresses.	½ barrel of Portland cement.
6 old oil-cans.	½ barrel of plaster Paris.
Lot of old linolia.	1 old bench.

Name.	Rank.	Age.	Occupation.	Residence.
Joe. Parris.....	Foreman.....	45	Plasterer.....	1829 K street, northwest.
James Moriarty.....	Engineer.....	41	Machinist.....	2013 K street, northwest.
William B. Read.....	Fireman.....	37	Plumber.....	723 Twenty-third street, northwest.
Samuel E. Edwards.....	Hostler.....	35	Blacksmith.....	1530 Q street, northwest.
James F. Edwards.....	Private.....	47	Carpenter.....	1604 Sixteenth street, northwest.
Joe. O. Guy.....	do.....	32	do.....	744 Seventh street, southeast.
James T. Adams.....	do.....	30	Clerk.....	1018 Twenty-second street, northwest.
Frank J. Snyder.....	do.....	37	Laborer.....	1014 Sixteenth street, northwest.
John A. Welsh.....	do.....	24	do.....	405 Second street, northeast.
Joe. Daniels.....	do.....	37	Jeweler.....	316 K street, northeast.

Respectfully submitted.

MARTIN CRONIN, Esq.,
Chief Engineer Fire Department, District of Columbia.

JOS. PARRIS, Foreman.

Inventory of Engine Company No. 2.

WASHINGTON, D. C., 1881.

SIR: I most respectfully submit the following list of property of No. 2 Engine Company:

One two-story engine house, with hose tower attached, located on D street, near Twelfth street, northwest.

ENGINE DEPARTMENT.

1 Clapp & Jones double-pump engine.	1 hand hammer.
1 cold heater attached to engine.	2 cold-chisels.
1 Pruentz relief valve attached to engine.	1 bucket axle grease.
2 spring-bottom oilers.	4 assorted files.
2 spanners.	1 soldering iron.
2 monkey-wrenches.	1 pair keys pipe tongs.
1 screw-socket wrench.	1 screw-jack.
2 socket wrenches.	1 cord of pine wood.
1 five gallon machine-oil can.	2 tons of engine coal.
1 five gallon coal-oil can.	2 pounds of Selden engine packing.
3 gallons of machine oil.	25 pounds of cotton-waste.
2 gallons of coal oil.	8 pounds of whitening.
1 gallon machine-oil can.	2 pounds of oxalic acid.
2 sheets of emery cloth.	18 papers of tripoli.
2 pairs of wire pliers.	1 extra engine pole.
1 vise and bench.	2 hand lanterns for engine.

HOSE DEPARTMENT.

2,000 feet of Paragon canvas, in good order.	6 nozzles.
200 feet of Paragon hose (wants cutting and coupling removed).	2 spray nozzles.
200 feet of old Acme canvas hose for fire service.	1 Pruentz patent cut-off nozzle.
1 hose carriage, in good condition.	4 brass play pipes.
2 long-handle axes.	1 pair of carriage shafts.
3 short-handle axes.	2 Johnson pumps.
3 ladder-straps.	2 smoke respirators.
2 Jones couplings.	4 hand lanterns (2 of them old.)
2 Jones couplings unfit for service.	1 reflecting lantern.
2 brass reducers.	100 feet of picket line.
1 T. brass connection.	100 feet of cotton life line.
2 gum pipes.	2 gum buckets.
1 brass pipe, leather covered.	1 extra carriage pole.
	1 carriage jack.
	2 extra carriage wheels.
	2 pipe holders.

HOSTLER'S DEPARTMENT.

2 bay and 2 gray horses.	1 peck of flax-seed meal.
2 sets of swinging harness.	1 bushel of coarse salt.
2 sets of double harness in fair condition.	4 good horse blankets.
4 extra horse bits.	4 old horse blankets.
3 old collars.	4 summer horse covers.
1 Dutch collar.	4 horse hoods, new.
4 extra traces.	4 horse hoods, old.
1 halter stems.	1 hay cutting box.
2 pad riding saddles.	1 feed bin.
2 new clipping-machines.	2 pitchforks.
1 old clipping-machine.	1 half-peck measure.
4 curry combs.	2 knee pads.
4 corn brushes.	8 hitching straps.
4 hair horse-brushes.	2 dozen assorted straps.
2 whips.	2 sets of lead bars.
1 old bridle.	2 horse buckets.
1 harness punch.	2 surcingles.
4 collar pads, old.	2 stable brooms.
2 sets of pole straps.	2 shovels.
2 old sets of breast straps.	1 feed sieve.
40 bushels of oats.	4 iron horse troughs.
100 pounds of straw.	4 iron trace chains.
200 pounds of hay.	1 swingletree.
6 bushels of mixed feed.	4 patent boss springs for traces.
	1 horse scraper.

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HOUSE DEPARTMENT.

12 yards of stair oil cloth.	30 yards of old linen crash.
12 iron bedsteads.	12 yards of stair carpet.
10 hair mattresses.	16 stair rods.
10 shuck mattresses.	12 cuspidors (spittoons).
11 feather pillows.	2 clocks.
30 bedspreads.	18 arm chairs.
30 blankets.	8 arm chairs, old.
24 pillow slips.	1 sofa.
24 sheets.	2 looking glasses.
1 dozen towels.	3 stoves and pipes.
1 sitting-room carpet.	1 center table.
1 sleeping-room carpet, old and badly worn.	1 secretary.
	2 coal hods.

MISCELLANEOUS.

25 feet of garden hose, old.	1 gross of matches.
3 extra glass water gauges.	2 scrub brushes.
1 pair of shears.	6 floor mops.
6 chamois skins.	4 paint brushes.
1 pound of sponge.	2 whitewash brushes.
15 pounds of castile soap.	6 lamp wicks.
12 cakes of glycerine soap.	1 water cooler.
20 bars of brown soap.	1 tin water boiler.
6 papers of stove polish.	1 coffee boiler.
6 corn brooms.	2 tin cups.
1 jack plane.	1 crosscut saw.
3 pounds of nails.	1 hatchet.
1 backgammon board.	3 door mats.
2 pokers.	1 dozen lights of glass.
2 stove brushes.	1 pound of putty.
1 water pot.	3 tons of stove coal.
2 hair combs.	1 dust pan.
2 hair brushes.	2 feather dusters.
2 wash stands.	2 stove shovels.
8 window shades.	1 bath tub.
1 Bible.	1 blank roll book.
1 alarm book.	2 step ladders.
1 day book.	1 billiard table and pool balls.
1 requisition book.	1 alarm gong.
1 book-case containing 80 bound books and 179 unbound.	

List of members of No. 2 Engine Company.

Name.	Rank.	Age.	Occupation.	Residence.
William A. Shedd....	Foreman.....	40	Machinist	311 Fourteenth street, northwest.
Samuel Dawes.....	Engineer.....	42	Carpenter	614 H street, northwest.
Frank Lewis.....	Fireman.....	41	Painter.....	332 C street, northeast.
James Norris.....	Hostler.....	37	Laborer.....	920 Twenty-sixth street, northwest.
Charles Mead.....	Private.....	40	Carpenter.....	467 I street, northwest.
Joseph Lenman.....	do.....	25	Blacksmith.....	523 Eleventh street, northwest.
John Maddox.....	do.....	43	Wheelwright.....	912 F street, northwest.
William Belt.....	do.....	33	Carpenter.....	912 F street, northwest.
Frank Wagner.....	do.....	38	Butcher.....	1854 D street, northwest.
William Mahoney....	Extra private..	33	Laborer.....	149 Fayette street, Georgetown.

Respectfully submitted.

WM. A. SHEDD,
Foreman No. 2 Engine Company.

MARTIN CRONIN, Esq.,
Chief Engineer, District of Columbia Fire Department.

Inventory of Engine Company No. 3.

I respectfully submit the following inventory of property in charge of No. 3 Engine Company:

ENGINEER'S DEPARTMENT.

1 second-class U-tank Amoskeag engine.	3 old suction.
1 Prunty's patent relief-valve.	1 short goose-neck.
1 Owen's patent hose-connection.	1 set lead bars.
20 feet of new suction.	1 hand-drill.
1 pair shears.	2 spanners for engine.
5 old piles.	1 Walton heater in working order.
5 oil-cans.	3 tons splint coal.
2 extra wheels.	2 tons heater coal.
1 vise and bench.	1 cord sawed and split wood.
2 chamois skins.	1 old coal-hod.
20 feet of steam-hose.	1 fuel basket.
7 assorted wrenches.	2 old shovels.
1 fire-shovel.	1 small ax.
1 poker.	1 broom.
5 squirt-cans.	1 bucket of axle-grease.
1 feather-duster.	$\frac{1}{2}$ gallon castor oil.
2 gallons lard-oil.	1 pound tallow.
2 sheet-iron fenders, for wheels.	1 piece of sponge.
1 drip-pan, for engine.	1 flue-cleaner.
1 jack-screw.	1 barrel coal oil.
10 pounds cotton-waste.	$\frac{1}{2}$ gallon machine oil.
1 large S wrench.	1 water-bucket.
2 lanterns, for engine.	1 pair dividers.
1 pair extension tongues.	

HOSE-CARRIAGE DEPARTMENT.

1 two-horse hose carriage.	1 plug reducer.
1 Nealy respirator.	2 brass play-pipes.
2 Johnson pumps.	1 water-cooler.
1 fire-ax.	4 gum spittoons.
2 cotton play-pipes.	1 step-ladder.
1 Prunty's relief-nozzle.	1 16-foot ladder.
2 spray nozzles.	1 clock.
2 extra nozzles.	4 curtains.
50 feet small rope.	1 old stove and pipes.
100 feet street rope.	50 feet of street hose.
1 ladder strap.	3 door mats.
2 hose-jackets.	2 floor brushes.
1 jack-screw.	1 large gong.
2 lanterns.	2 cotton mops.
1 water-bucket.	2 mop-handles.
2 Baltimore reducers.	1 chamois skin.
1 carriage apron.	2 sponges.

HOSE DEPARTMENT.

2,150 feet of paragon hose, new.	200 feet of leather hose, worthless.
2,100 feet of 2-ply Acme hose, old.	

HOSTLER'S DEPARTMENT.

4 harness.	2 sets of old harness.
3 feed-bins.	4 linen horse-covers.
10 bushels oats.	4 new horse-blankets.
400 pounds hay.	4 old horse-blankets.
100 pounds straw.	4 old neck-blankets.
1 bushel bran.	1 breast-collar.
1 bushel meal.	4 extra pole-straps.
$\frac{1}{2}$ bushel flaxseed meal.	2 horse-brushes.
4 sets of harness.	2 curry-combs.
4 bridles.	2 old collars.

2 old whips.
 4 patent pole-snaps.
 4 halter-straps.
 2 horse-buckets.
 4 old hitching-straps.
 1 pair clippers, new.
 1 pair clippers, worthless.
 2 horse-scrapers.
 1 mane-brush.
 1 stable shovel.
 1 syringe.

1 harness-punch.
 1 watering-pot.
 1 riding-saddle.
 1 wheelbarrow.
 1 pitchfork.
 2 pieces soap.
 2 pieces sponge.
 1 can harness dressing.
 1 pair clipping-shears.
 1 extra bridle.

HOUSE DEPARTMENT.

11 iron bedsteads.
 10 shuck mattresses.
 12 hair mattresses.
 11 feather pillows.
 2 hair pillows.
 11 white spreads.
 27 white blankets.
 33 bed-sheets.
 22 pillow-cases.
 7 towels.
 2 new towels.
 12 new sheets.
 9 new pillow-cases.
 3 old carpets.
 2 old stair-carpets.
 16 arm-chairs.
 2 fancy chairs.
 1 office-chair.
 2 large tables.
 2 center tables.
 12 cuspidors.
 8 gum spittoons.
 5 china spittoons.
 1 clock.
 2 carpet rugs.

4 door-mats.
 10 curtains.
 1 writing-desk.
 1 piece oil-cloth.
 1 looking-glass.
 1 hair brush and comb.
 1 water-bucket.
 1 feather duster.
 1 dust-pan.
 1 dust-brush.
 1 broom.
 1 fire-board.
 1 chamois skin.
 1 new stove and pipes.
 1 scrubbing-brush.
 1 lot books and paper.
 1 monthly-report book.
 1 requisition book.
 1 note book.
 1 lot writing-paper.
 1 picture of chiefs' convention.
 4 pictures of Patent Office fire.
 1 large alarm bell with striking apparatus attached.
 1 set of rules.

STORE ROOM.

1 wall brush.
 3 new chamois skins.
 2 gongs.
 1 blacking-brush.
 1 pound sponge.
 ½ gross matches.
 ½ pound acid.
 ½ dozen tripoli.
 ½ pound rotten stone.
 11 sheets emery cloth.
 2 papers tacks.
 8 pounds brown soap.
 10 pounds castile soap.
 1 Jones coupling.
 ½ sheet of gum.
 12 sheets crocus cloth.
 1 whitewash brush.
 18 small snaps.
 2 curry-combs.
 6 large bulwinkle snaps.
 12 small bulwinkle snaps.
 1 horse-brush.
 2 new whips.
 2 small door-gongs.
 6 old nozzles.

2 small axes.
 2 hand scrubbing-brushes.
 4 old lanterns.
 1 old steam-gauge.
 5 new bit-straps.
 4 packages curtain-cord.
 2 dust-brushes.
 5 new hame-straps.
 1 extra relief-nozzle.
 3 new halter-straps.
 3 carpenter planes.
 3 new files.
 1 swinging lamp.
 1 washer cutter.
 1 whip-lash.
 2 floor-brushes.
 2 patent pole-snaps.
 1 pound copper rivets and burs.
 4 new bridles.
 2 long-handled scrubbing-brushes.
 5 brooms.
 3 old pole-straps.
 4 sleeve jackets.
 1 old gum-pipe.

List of members No. 3 Engine Company.

Names.	Rank.	Age.	Occupation.	Residence.
Walter Cox.....	Foreman	34	Carpenter	214 Delaware avenue, northeast.
William Leeman.....	Engineer	43	Machinist	402 B street, southeast.
William Kirkpatrick..	Fireman	35	Carpenter	51 D street, northeast.
Michael Kane	Hostler	41	Hostler	317 B street, northeast.
James Frazier	Private	42	Mariner	809 East Capitol street.
Samuel Nelson	do	24	Carpenter	504 E street, southeast.
James Nolan	do	30	Plasterer	712 C street, northeast.
Edward Whyte	do	25	Wood-turner	New Hampshire ave. and M st.
John Kane	do	31	Plasterer	411 Fourth street, northeast.
Lawrence Grant	do	27	Bricklayer	110 L street, northwest.
James Lowe	Watchman	52	Carpenter	203 Second and A streets, north-east.

Inventory of Engine Company No. 4.

WASHINGTON, D. C., July 1, 1881.

SIR: I most respectfully submit the following list of property of No. 4 Engine Company from July 1, 1880, to June 30, 1881.

One two-story brick house located on Virginia avenue between Fourth-and-a-half and Sixth streets southwest, with stable and hose tower attached.

ENGINEER'S DEPARTMENT.

1 third-class Silsby engine.	1 half-gall. oil-can.
1 engine-heater.	7 spanner-wrenches.
2 blind-caps.	1 socket wrench.
6 files.	3 monkey-wrenches.
1 extra pole.	3 pole-straps.
1 hammer.	3 oil-cans.
1 brace.	1 reducer.
1 extra wrench.	1 ten-gallon oil-can.
2 pairs pliers.	1 pipe-wrench.
1 five-gallon oil-can.	4 slip-joints.
1 three-gallon oil-can.	1 shovel.
1 slice-bar.	1 relief-valve.
1 bench-vise.	2 pole-snaps.
1 washer-cutter.	1 wood-ax.
1 whip.	1 rule.
1 flue-brush.	2 play-pipes.

HOSTLER'S DEPARTMENT.

4 horses.	3 old bits.
4 sets harness.	4 gum horse-covers.
1 set harness, unserviceable.	2 sweat-scrapers.
2 old breeching.	1 shovel.
2 pair old hames.	3 pitch forks.
3 pair old pole-straps.	1 half-peck measure.
4 old saddle-pads.	1 sieve.
5 leather-traces.	1 broom.
7 brow-bands.	30 ft. $\frac{1}{2}$ hose.
4 horse-blankets.	2 curry-combs.
4 horse-hoods.	2 hose-brushes.
2 figure-8 rings.	2 rubbing-cloths.
2 pole-snaps.	1 pair of lead bars.
3 old bridles.	1 watering-pot.
1 knee-pad.	2 wooden buckets.
1 over-draw.	1 gum bucket.
1 pad-saddle.	2 swinging-lamp.
2 hitching-straps.	2 pairs clippers.
1 seat-strap.	3 whips.
1 pair shears.	2 mane-combs.
1 hame-strap.	8 bullwinkle snaps.
9 small snaps.	1 harness-punch.

HOSE DEPARTMENT.

1 hose carriage.
600 feet paragon hose.
700 feet 4-ply Acme hose.
1,700 feet hose in bad order.
200 feet old leather hose.
4 branch pipes.
12 nozzles.
1 relief-nozzle.
1 pipe holder.
1 pair shafts.
2 jack-screws.
2 Johnson pump.
1 goose-neck.
8 spanners.
1 spray-nozzle.

1 pair sleeve-breechea.
1 carriage-whip.
100 feet life-line.
100 feet street-line.
1 reducer.
4 fire-axes.
1 gum bucket.
4 half-traces.
2 pole-straps.
2 carriage-lamps.
5 ladder-straps.
2 pole-snaps.
4 extra half-traces.
1 carriage-apron.
1 Nealy respirator.

FURNITURE AND BEDDING.

12 iron bedsteads.
11 mattresses.
30 bed-sheets.
11 pillow-cases.
34 blankets.
28 chairs.
14 spittoons.
2 time-clocks.
3 stoves and pipes.
3 looking-glasses.
1 dust-pan.
1 writing-desk.
2 carpets.
3 oil-rugs.
6 pieces oil-cloth.
2 water-closets.
1 bull's-eye brush.
1 piece zinc.
10 bed-spreads.
12 towels.
1 whisp broom.
1 frame of rules.
7 gas globes.

18 stair-rods.
10 window-shades.
1 table-cover.
3 coal-hods.
1 ink-stand.
1 table.
13 yards oil-cloth.
20 yards carpet crash.
4 floor-mops.
1 watering-pot.
2 hair-combs.
2 hair-brushes.
1 alarm-gong.
1 wash-stand.
1 bath-tub.
1 wall-brush.
1 book-case.
5 door-mats.
11 white bedspreads.
4 feather dusters.
1 water-cooler.
4 pictures.
1 waste-basket.

STORES ON HAND.

25 pounds cotton-waste.
6 chamois skins.
18 papers tripoli.
5 bars castile soap.
2 ladder-straps.
2 paint-brushes.
2 planes.
1 adze.
6 hose-couplings.
1 copper boiler.
12 sheets emery-cloth.
2 pounds curtain-cord.
6 corn brooms.
24 cotton mops.
 $\frac{1}{2}$ gallon copal varnish.
3 gallons coal-oil.
 $\frac{1}{2}$ cord sawed and split pine wood.
100 pounds straw.
5 bushels oats.
 $\frac{1}{2}$ bushel salt.
1 pipe-cutter.

2 whitewash-brushes.
 $\frac{1}{2}$ gallon turpentine.
60 boxes matches.
2 papers tack.
2 chair-bottoms.
1 dust-brush.
20 pounds axle-grease.
5 pounds white-lead.
1 handsaw.
1 hatchet.
5 pounds whiting.
1 pickax.
4 mop-handles.
2 gallons linseed-oil.
4 lights glass.
5 gallon lard-oil.
3 tons splint coal.
200 pounds hay.
1 peck flaxseed-meal.
1 stock and die.
1 pipe-vise.

EXTRA APPARATUS.

1 four-wheel fuel-wagon.	4 old Amoskeag wheels.
1 old truck.	1 set single harness.
2 old Silsby wheels.	1 oil-can.
1 coal-shovel.	

List of members No. 4 Engine Company.

Name.	Rank.	Age.	Occupation.	Residence.
William T. Sorrell	Foreman	46	Mariner	412 Twelfth street, southwest.
Francis Donnelly	Engineer	38	Pattern-maker	309 D street, southwest.
F. H. Myers	Fireman	39	Carpenter	1218 Union street, southwest.
John Waldron	Hoistler	34	Laborer	405 Four-and-a-half street, southwest.
William Ricks	Private	30	Engineer	480 Pennsylvania avenue, northwest.
William White	do	39	Brick-maker	124 Willow Tree alley, southwest.
Thomas J. Coffey	do	26	Laborer	306 C street, southwest.
Jos. Creamer	do	26	do	610 Maryland avenue, southwest.
Robert Dickson	do	28	do	H, between Fourth and Fifth streets, northwest.
R. T. Williams	do	25	Bricklayer	621 D street, southwest.
John Maken	do	28	Laborer	925 Tenth street, northwest.

Respectfully submitted.

WM. T. SORRELL,
*Foreman No. 4 Engine Company.*MARTIN CRONIN, Esq.,
*Chief Engineer District of Columbia Fire Department.**Inventory of Engine Company No. 5.*

WASHINGTON, D. C., August 25, 1881.

SIR: I most respectfully submit the following inventory of property of No. 5 Engine Company for the year ending June 30, 1881.

One two-story brick house, in very bad condition, with large bell, and hose-house attached, located at No. 1066 Thirty-second street, West Washington.

ENGINEER'S DEPARTMENT.

1 double pump, second-class, Amoskeag engine.	7 pounds Selden's packing.
1 Bashor and Stedman's coilless heater, attached to engine and bath-tub.	40 pounds cotton-waste.
2 extra heater-cocks.	14 tons splint coal.
1 Prunty's relief valve, hose, and clamp.	2 brass play pipes and nozzles.
4 extra wheels.	1 leather gong strap.
1 screw jack.	1 steam-register gange.
7 small files.	1 hand ax.
4 squirt-cans.	4 extra brass axle-nuts.
12 large files, good.	2 coal-oil cans and 20 gallons of oil.
2 large files, bad.	2 side lights.
3 shovels.	2 gum sleeve-gaskets.
1 feather duster.	1 extra sleeve.
1 vise and bench.	1 sleeve brace.
13 wrenches, assorted.	1 set of lead bars.
1 ratchet wrench.	2 suction sleeve-leathers.
4 leather half traces and snaps.	20 feet of copper-wire rope.
1 extra grate bar and 3 centers.	2 extra heater grates.
6 glass water-gauges.	30 feet of rope.
1 globe valve, attached to heater.	2 slice bars.
1 pint castor oil and can.	1 tub scraper.
	2 tub brushes.
	1 tub-brush handle.

- | | |
|---|--|
| 1 reducer. | 15 pounds sheet-gum packing. |
| 1 plug thawer. | $\frac{1}{4}$ cord sawed and split wood. |
| 1 spring clamp. | 3 seat cushions. |
| 1 lead rope and snaps. | 1 clock; 2 gongs. |
| 2 machine-oil cans and 10 gallons of oil. | 2 plug keys. |
| 1 brass plug. | 15 pounds tallow. |
| 7 tube irons. | 1 small nozzle, brass. |
| 4 air-chamber spanners. | 2 sponges; 1 chamois. |
| 1 hose spanner. | 2 canvas sleeves. |
| 1 small cut-off valve. | 1 set Prunty's spring valves. |
| 2 brass lanterns. | 2 brass blind caps. |
| 3 monkey-wrenches. | 1 tool cupboard. |
| 1 extra pole. | 15 pump-valve springs. |
| 1 grate pattern. | 1 gum bucket. |
| 1 glass water-gauge, attached to heater. | 8 leather pump-cups. |
| 7 balls lamp wick. | 1 extra steam-gauge. |

HOSE-CARRIAGE DEPARTMENT.

- | | |
|--|---|
| 1 4-wheel hose-carriage. | 1 chamois. |
| 2, 650 feet of good Paragon hose. | 1 sponge. |
| 1, 100 feet of Acme hose, in fair condition. | 1 gum bucket. |
| 150 feet of unserviceable hose. | 1 extra pole. |
| 1 gum hose-pipe and nozzle. | 2 extra swingle-trees. |
| 2 copper hose-pipes. | 4 leather half traces and snaps. |
| 2 leather hose-pipes and nozzles. | 50 feet of rope for hose tower. |
| 2 Prunty's cut-off nozzles, complete. | 1 fire ax and holder. |
| 2 Oyston's spray-nozzles. | 2 sets and a half of Jones' hose coup- |
| 1 metal pipe holder. | lings. |
| 1 well wheel, for horse power. | 2 pipe racks. |
| 25 wooden hose pegs. | 2 seat cushions. |
| 4 ladder straps. | 6 spanners. |
| 1 wheel nut-wrench. | 4 hose patches. |
| 1 leather gooseneck. | 5 spool straps. |
| 1 feather duster. | 9 iron fenders for hose tower. |
| 1 jack; 2 brass lanterns, | 3 extra brake blocks. |
| 1 nickel-plated reflecting lamp. | 2 smoke caps. |
| 1 plug wrench. | 1 smoke-cap box. |
| 6 plug keys. | 300 feet cotton rope life-line. |
| 2 Johnson force-pumps and racks. | 100 feet manila rope life-line. |
| 2 reducers, brass. | 3 small pickaxes, scabbards, and belts. |
| 1 brass spring spool-snap. | 2 leather pipe-holders. |
| 1 inside fire-box key. | 1 leather pocket. |
| 1 fire-box master key. | 1 spool canvas and apron. |
| 1 fire-alarm key. | 1 brass bell and rack. |

HOUSE DEPARTMENT.

- | | |
|---|----------------------------------|
| Schneider's improvement for releasing
horse from stalls. | 1 Bell telephone. |
| 1 fire-alarm gong. | 3 step ladders. |
| 10 iron bedsteads. | 1 Worcester's Dictionary. |
| 10 compensating bedsprings. | 1 District fire-alarm card. |
| 10 hair mattresses. | 2 tons hard coal. |
| 10 shuck-and-cotton mattresses. | 1 bottle ink. |
| 45 bed sheets. | 1 inkstand. |
| 44 pillow slips. | 1 scrubbing brush and handle. |
| 39 pairs white blankets. | 4 floor mops. |
| 1 single white blanket. | 1 clothes brush. |
| 10 feather pillows. | 1 iron hand-rail. |
| 9 hair pillows. | 8 blank receipt books. |
| 32 bedspreads. | 12 iron stair brackets. |
| 20 towels. | 1 force-pump, |
| 1 bunk-room carpet. | 1 company marking-stamp and ink. |
| 2 stair carpets. | 13 spittoons. |
| 1 stair oilcloth. | 6 tin cuspidores. |
| 16 nickel-plated stair rods. | 7 floor mats. |
| 1 bath-room oilcloth. | 1 writing desk. |
| 1 Morse key and sounder. | 2 hair combs. |
| | 2 hair brushes. |

2 wooden buckets.
 4 stove brushes.
 3 tin cups.
 1 feather duster.
 1 copper boiler.
 1 hatchet.
 1 paper cutter.
 2 2-light gas chandeliers and globes.
 1 2-light gas swinging light.
 1 1-light gas pendant.
 5 wall gas brackets.
 5 self-lighting gas burners.
 1 requisition book.
 2 squirt cans.
 2 map handles.
 3 pair wire pliers.
 1 bottle mucilage.
 1 picture and frame of fire engineers
 United States.
 1 table.
 1 looking-glass.
 2 bookcases.
 160 bound books.
 1 water cooler and stand.
 4 coal hods.
 1 large shovel.
 1 bucket for sugar.
 1 bucket for coffee.
 4 pounds sugar.
 2 pounds coffee.
 1 washer cutter.
 1 handsaw.
 10 company books.
 10 bound Rules and Regulations.
 1 Rules and Regulation card.
 1 piece zinc.

2 benches.
 1 sprinkling can.
 1 dust pan.
 1 grindstone.
 3 ceiling hooks.
 2 sponges.
 2 chamois.
 1 blacking brush.
 1 blacking dip.
 1 box blacking.
 6 fire-alarm keys.
 60 feet street hose and pipe.
 2 door ropes, hooks, and rings.
 2 pairs gas tongs.
 2 fig. 5 dies.
 16 chairs.
 1 revolving office chair.
 1 clock.
 1 pair scissors.
 16 window shades and fixtures.
 12 lockers.
 2 stoves and pipe for one.
 2 small shovels.
 1 coffee pot.
 2 long handled hair dusters.
 1 short handled hair duster.
 1 whisk broom.
 2 common brooms.
 1 willow broom.
 1 backgammon board and dies.
 1 iron basin.
 1 marble top washstand.
 1 soap dish.
 1 bath tub.
 1 urinal.
 1 water closet.

HOSTLER'S DEPARTMENT.

4 horses.
 2 sets of double harness complete with
 the Champion swinging hames
 weights and pulleys attached.
 2 extra sets double harness.
 8 horse blankets.
 4 horse boots.
 2 water buckets.
 2 wooden horse scrapers.
 4 brass pole snaps.
 2 pad saddles.
 10 halter stems.
 8 cans harness oil.
 100 feet rope.
 4 mane and tail cards.
 2 extra collar pads.
 1 mixed feed box.
 1 gill turpentine.
 1 quart oil origanum.
 20 bullwinkle snaps.
 1 clipping machine.
 6 curry combs.
 4 pitchforks.
 1 peck measure.
 4 fig. 8 rings.
 2 shovels.
 4 extra bridles.
 1 pair clipping shears and comb.
 1 halter chain.
 1 head halter.
 1 sifter.
 1 harness punch.

2 mane combs.
 4 linen horse covers, bad.
 4 oil horse covers.
 1 pint oil spike.
 1 bushel salt.
 1 Dutch collar and pad.
 24 buckle covers.
 2 sets hand holds.
 8 horse brushes.
 4 surcingles.
 4 horse boots.
 1 stable broom.
 2 corn brooms.
 1 watering trough.
 4 hitching straps.
 1 single block.
 1 double block.
 5 whips.
 17 hame straps.
 3 feed bins.
 1 wheelbarrow.
 1 quart arnica.
 2 rubbing cloths.
 2 water brushes.
 1 pint sweet spirits niter.
 4 mane brushes.
 2 leather horse muzzles.
 4 hame springs for line snaps
 1 can harness dressing.
 1 meal bucket.
 3 sponges.
 6 iron horse troughs.

FORAGE DEPARTMENT.

10 bushels oats.	1/2 bushel bran.
200 pounds hay.	1/2 peck flax-seed meal.
100 pounds straw.	

STOREHOUSE DEPARTMENT.

53 papers eagle tripoli.	5 feet hoop iron.
1 pound stove polish.	1 paper screws.
29 lamp wicks.	2 fig. D rings.
47 sheets crocus cloth.	4 large trace snaps.
1/2 bucket axle grease.	15 pounds gasket gum.
6 boxes copper rivets.	1 extra nickel-plated oil cup.
6 panes glass.	9 sets Work couplings.
1 1/2 gallons raw oil.	18 Work coupling rings.
13 pounds castile soap.	5 Morse coupling rings.
8 chamois.	15 feet gum tubing.
14 pounds oxalic acid.	1 1/2 pounds glue.
3 pounds nails.	2 gong blocks.
29 sheets emery cloth.	6 small iron pulleys.
7 lamp globes.	2 hose-coupling machines.
12 snaps.	10 boxes blacking.
3 boxes roach powder.	1 small chain.
8 pounds sponge.	1 whip socket.
12 pounds whiting.	2 oil cans, wooden covers.
6 papers carpet tacks.	1 acid box.
1 1/2 gross matches.	1 spring lock.
2 extra brass lanterns.	3 pieces smoke cap sponge
2 pounds copper wire.	4 hame springs.
10 cotton floor mops.	1 small paint brush.
5 papers sapolio.	1 glue pot.
2 corn brooms.	1 glue brush.
2 gallons boiled oil.	10 pounds Babbitt soap.
2 floor mop handles.	2 willow brooms.
6 carriage bolts.	1 hose tap.
3 scrubbing brushes.	1 blacking brush.
1 scrubbing brush handle.	1 blacking dip.
1 bottle insect exterminator.	2 funnels.
47 cakes toilet soap.	1 hair dust brush.
2 pounds brown soap.	1 whiting box.
1/2 pint turpentine.	8 coat hooks.
6 feather dusters.	2 whitewash brushes.
3 pounds rotten stone.	

ASSISTANT CHIEF'S DEPARTMENT.

1 horse.	1 lever jack.
1 carriage.	2 extra wheels.
1 reflecting lamp.	2 lap robes.
1 whip.	3 sets single harness.
1 lamp and globe.	1 leather covered bit.
2 extra breeching straps.	1 gum horse cover.
1 extra pair shafts.	1 horse blanket.
2 horse boots.	1 extra draw rein.
1 extra crupper.	1 extra breeching.
1 extra breast collar.	1 sponge.
1 chamois.	

List of members, No. 5.

Names.	Rank.	Age.	Occupation.	Residence.
Louis P. Lowe.....	Foreman.....	31	Clerk.....	2915 Olive avenue.
Edwards Rhodes.....	Engineer.....	42	Engineer.....	3246 Prospect avenue.
J. D. Angell.....	Fireman.....	33	do.....	1066 Thirty-first street.
J. H. Mahorney.....	Hostler.....	39	Carpenter.....	3221 P street.
Churchill Hultt.....	Private.....	33	Laborer.....	1918 New York avenue.
A. J. Sullivan.....	do.....	28	Blacksmith.....	3275 Prospect avenue.
J. W. Kurts.....	do.....	27	Carpenter.....	1687 Valley street.
J. T. Greaves.....	do.....	32	Engineer.....	2911 Olive avenue.
T. C. Cobelan.....	do.....	32	Laborer.....	160 High street.
William Ellis.....	do.....	26	do.....	1066 West Market Space.

Very respectfully,

LOUIS P. LOWE,
Foreman No. 5 Engine Company.

MARTIN CRONIN,
Chief Engineer, District of Columbia Fire Department.

Inventory of No. 6, Engine Company.

WASHINGTON, D. C., June 30, 1880.

SIR. I most respectfully submit the following list of property up to June 30, 1881.

This company occupies a two-story brick house located on Massachusetts avenue between Fourth and Fifth streets, northwest.

ENGINEER'S DEPARTMENT.

1 Clapp & Jones engine in good condition.	1 gallon castor-oil.
1 Prunty relief-valve.	3 coils Selden's packing.
1 Walton Bros. engine-heater.	25 pounds cotton waste.
1 gum suction, 8 feet long.	24 papers tripoli.
1 cotton suction, 13 feet long.	15 pounds whiting.
2 signal lamps.	1 gallon coal-oil.
2 hand lamps.	1 gallon machine-oil.
1 head-light.	24 sheets emery cloth.
1 squirt can.	24 sheets crocus cloth.
1 small monkey-wrench.	1 oil-stone.
1 gong.	2 chamois skins.
4 spanners.	6 extra engine-tubes.
1 hammer.	1 tube wrench.
2 packing-box wrenches.	1 extra singletree.
1 slice-bar.	3½ tons engine coal, splint.
1 shovel.	4 files.
1 pair slip-joints.	½ cord pine wood.
2 ½-inch stop-cocks.	4 tons chestnut coal for heater.
4 brass pipes.	1 5-gallon oil-can.
1 gum bucket.	1 2-gallon oil-can.
25 feet ¾-inch steam-hose.	2 heater-cocks, old.
1 gooseneck cotton.	1 extra engine-wheel.
4 extra nozzles.	2 suction clamps.
1 large monkey-wrench.	5 balls lamp-wick.
1 screw-jack.	12 lamp wicks.
1 coupling-expander.	1 reducer.
2 pounds sheet gum.	2 ½-inch stop-cocks, old.
1 feather duster.	2 slip-joints, old.
1 extra steam-gauge, old.	1 vise.
10 engine-valves, old.	1 engine clock.
1 ½-gallon oil-can.	1 hammer, old.

HOSTLER DEPARTMENT.

5 horses in good condition.	9 horse blankets.
2 sets swinging harness.	6 horse hoods.
1 set double harness.	1 gum blanket, old.
2 sets single harness.	4 lap robes.
15 bushels of oats.	5 whips.
400 pounds hay.	1 double block and fall.
300 pounds straw.	4 cans harness-oil.
3 bushels mill-feed.	1 riding saddle.
$\frac{1}{2}$ peck of flax-seed meal.	2 horse buckets.
$\frac{1}{4}$ peck salt.	2 brooms.
4 pitchforks.	1 lot straps.
2 scoop shovels.	6 halter-stems, old.
4 horse brushes.	1 harness, old.
4 curry-combs.	1 feed-bin, old.
4 mane brushes.	1 feed-bin, new.
12 snap-hooks.	1 harness-punch.
6 hame-straps.	2 half-peck measures.
1 clipping-machine, good.	1 pair pole-snaps, extra.
2 clipping-machines, old.	12 bullwinkle snaps.
1 pair shears.	1 fine sieve.
2 horse scrapers.	2 Dutch collars.
4 hitching-straps.	2 sets hand-holds.
1 gallon arnica.	4 surcingles.
2 exercising saddles.	1 clipping-comb.

HOSE DEPARTMENT.

1 hose-carriage in good condition.	$\frac{1}{2}$ bucket axle-grease.
57 sections cotton hose in good condition.	2 sets Jones couplings.
4 gum pipes.	2 2-way Siamese connections.
12 plain nozzles.	2 hose patches.
1 spray nozzle.	12 plug keys.
1 cut-off nozzle.	5 ladder straps.
1 gum bucket.	1 screw-jack.
200 feet cotton life line.	1 wooden jack.
300 feet manila rope.	1 monkey-wrench.
2 Johnson pumps.	2 extra singletrees.
12 steel spanners.	2 extra lamp-irons.
2 canvas aprons.	1 lamp.
3 reducers.	50 feet $\frac{1}{2}$ -inch gum hose.
2 axes.	1 cotton pipe.

HOUSE DEPARTMENT.

6 Oak arm chairs.	4 chairs, old.
2 looking glasses.	1 bench, old.
2 combs and brushes.	1 large walnut table.
2 whisk brooms.	1 center walnut table.
2 water-closets.	10 curtains.
1 bath-tub.	1 table cover.
1 urinal.	2 inkstands.
1 wash-stand.	1 desk.
6 yards oil cloth.	3 ruggets.
6 rugs.	22 mattresses, good.
1 sitting-room carpet.	11 mattresses, old.
2 front-room carpets.	30 bed spreads.
1 bed-room carpet.	13 feather pillows.
36 gas-fixtured globes.	18 walnut cane-seat chairs.
2 feather dusters.	2 sets lace curtains.
19 stair rods.	1 gong alarm.
15 yards stair carpet.	11 iron bedsteads.
30 yards carpet oil-cloth.	1 walnut bedstead.
3 door mats.	1 walnut wardrobe.
1 set rules and regulations.	1 lounge.
1 telephone.	1 walnut bookcase.
2 12-light chandeliers.	3 pieces zinc.
1 2-light chandelier.	1 office chairs.
7 double swing brackets.	1 picture chief fire engineers United States.
4 1-light gas fixtures.	50 sheets.
2 stoves.	25 pillow slips.
2 clocks.	36 double blankets.
18 spittoons.	

12 roller towels.
1 dustpan and brush.
1 wall brush.

2 step-ladders.
15 yards carpet oil-cloth, old.
1 lot pictures.

STORE-HOUSE DEPARTMENT.

25 pounds castile soap.
15 pounds brown soap.
2 pounds sponge.
6 chamois skins.
5 cotton mops.
4 mop-handles.
3 papers tacks.
4 scrubbing brushes.
3 dust brushes.
1 wall-brush.
1 pound copper rivets.
15 corn brooms.
3 pounds copper wire.
3 papers stove-polish.

$\frac{1}{2}$ gallon turpentine.
 $\frac{1}{2}$ gallon boiled oil.
4 paint brushes.
12 sets Work's patent hose coupling.
4 boxes toilet soap.
 $\frac{1}{2}$ gallon castor oil.
12 sheets emery cloth.
12 sheets crocus cloth.
1 lot straps.
 $\frac{1}{2}$ dozen lamp-globes.
2 panes glass.
2 pair T-hinges.
1 lamp and bracket.

MISCELLANEOUS.

1 wagon-pole.
2 shovels.
2 pieces $\frac{1}{2}$ -inch rubber hose.
1 lot old cans.
1 old watering-pot.
1 lot old iron.

1 cotton goose-neck.
1 crowbar.
2 coal-hods.
1 sieve.
2 hay-hooks.

List of members of Engine Company No. 6.

Name.	Rank.	Age.	Occupation.	Residence.
Charles Merrillat	Foreman	24	Plumber	740 Fourth street, northwest.
Thomas Martin	Engineer	42	Blacksmith	475 I street, northwest.
Newman Wilkinson	Fireman	34	Machinist	1000 Sixth street, northwest.
Alexander Savoy	Hostler	38	Barber	218 G street, northwest.
John Broaman	Private	28	Paver	309 K street.
Howard Wright	do	30	Carpenter	411 New York avenue, northwest.
William Ennis	do	31	Laborer	935 Fourth street, northwest.
Patrick Carroll	do	29	Blacksmith	732 Fourth street, northwest.
William Roche	do	32	Bricklayer	110 L street, northwest.
Edward Sullivan	do	23	Stone-cutter	918 First street.
Jacob Acker	do	35	Locksmith	10 I street, northeast.

Respectfully submitted.

CHARLES MERRILLAT,
Foreman No. 6 Engine Company.

MARTIN CRONIN,
Chief Engineer, District of Columbia Fire Department.

Inventory of Truck Company A.

WASHINGTON, D. C., August 29, 1881.

SIR: I most respectfully submit the following inventory of real estate stock, fixtures, &c., held by Truck Company A for the year ending June 30, 1881.

Respectfully submitted.

C. CLARK, *Foreman.*

MARTIN CRONIN,
Chief Engineer District of Columbia Fire Department.

1 2-story brick house.

TRUCK ROOM.

1 Buckley and Merritt 4-spring truck in good condition.	1 battering ram.
1 65-foot extension ladder and lever attached, with poles, stays, halyards, and platform complete.	1 spade.
1 41-foot ladder.	4 lamps.
1 36-foot ladder.	2 side lamp reflectors.
2 30-foot ladders.	1 hand reflector.
1 24-foot ladder.	1 head light.
1 20-foot ladder.	6 axes.
1 16-foot ladder.	2 respirators.
1 12-foot ladder.	1 pipe-holder.
9 hooks.	1 gas wrench.
5 hose hooks.	4 gum buckets.
1 gong.	1 6-inch grab hook.
1 hammer.	3 Johnson pumps.
3 75-foot life lines.	2 monkey-wrenches.
3 forks.	1 auger.
	1 pair pliers.
	1 crow-bar.
	1 wheel for truck, extra.

HOSTLER'S DEPARTMENT.

2 horses.	2 halter chains.
1 double set of swinging harness.	2 halter straps.
1 saddle.	2 bullwinkle snaps.
4 blankets.	1 chamois.
2 pairs clippers.	2 buckets.
1 pair shears.	2 whips.
1 punch.	2 forks.
2 old bridles.	2 shovels.
2 curry combs and brushes.	1 set extra double harness.
2 mane brushes.	2 brooms.
2 figure-8 rings.	

ENGINE DEPARTMENT EXTRAS.

1 second-class Amoskeag engine.	6 assorted wrenches.
1 hose carriage.	1 shovel.
1 lamp.	1 alash bar.
1 oil can.	2 fenders.
1 monkey-wrench.	

SITTING-ROOM AND HALLWAY.

1 old carpet.	1 stove and pipe.
8 arm-chairs.	1 telephone and sounder.
1 clock.	1 piece oil-cloth, old.
1 cooler.	6 spittoons.

SLEEPING APARTMENTS AND BATH-ROOM.

24 chairs.	1 alarm gong.
13 iron bedsteads and springs.	12 spittoons.
13 mattresses.	2 brushes and combs.
12 hair pillows.	2 soap dishes.
12 feather pillows.	1 step-ladder.
9 curtains.	1 gum bucket.
1 lounge.	1 scrub brush.
2 arm-chairs.	2 looking-glasses.
1 bookcase.	1 inkstand.
2 stoves.	17 globes.
1 clock.	1 scrap-basket.
20 white spreads.	1 table and cover.
35 sheets.	1 day-book.
37 pillow slips.	1 feather duster.
34 towels.	1 broom.
41 blankets.	1 dust-pan and brush.
3 carpets.	1 mop.
1 oil-cloth in bath room.	1 stair carpet and rods.
1 desk.	

STOREROOM AND MISCELLANEOUS.

3 extra engine wheels.	10 sheets emery-cloth.
5 pieces rope.	1 breast collar.
2 coal-hods.	1 ton steamer coal.
2 shovels.	6 ax handles.
3 wooden buckets.	2 mane combs.
1 gum bucket.	1 reducer.
1 pipe holder.	2 pole chains.
3 mops.	1 iron trough.
3 brooms.	4 mop-handles.
1 whitewash-brush.	1 leather pipe.
2 oil-cans.	3 old sections canvas hose.
1 wheelbarrow.	1 work-bench.
1 watering-pot.	1 vise.
2 picks.	2 rubbing-cloths.
5 door mats.	5 pounds castile soap.
3 oak boards.	15 cakes Babbitt soap.
pieces old garden hose.	1 pair gas-pliers.
1 jack-plane.	8 papers stove-polish.
1 fore-plane.	1 rule.
1 smoothing-plane.	15 pound lead.
1 iron plane.	2 dusters.
2 files.	$\frac{1}{2}$ gallon hard oils.
3 pairs tongs.	$\frac{1}{2}$ gallon turpentine.
1 jack.	5 dozen matches.
2 hub wrenches.	5 paint brushes.
1 saw.	2 glasses for reflector.
1 screw-driver.	2 chimneys.
10 pounds waste.	8 snaps, assorted.
2 cans harness oil.	3 pieces linoleum.
2 squirt cans.	1 picture.
8 papers tripoli.	

List of members of Truck Company A.

Name.	Rank.	Age.	Occupation.	Residence.
C. Clark	Foreman	42	Laborer	1511 Rhode Island avenue.
D. F. Craven	Tillerman	29	Seaman	229 Tenth street, s. e.
J. O. Leary	Hostler	32	Blacksmith	North Capitol, bet. G and H.
J. Nelson	Private	38	Laborer	B street, bet. Third and Fourth, n. e.
Thomas Scott	do	31	Carpenter	Eighth street, bet. E and G, s. e.
William Lunkey	do	31	Laborer	131 Third street, n. e.
H. Hernaline	do	33	do	Sixth street, bet. A and B, s. e.
Thomas R. Newman	do	45	Blacksmith	Third and A, n. e.
R. T. Williams	do	25	Bricklayer	Seventh street, above W.
S. E. Henry	do	32	Laborer	22 Second street, n. e.

Inventory of Truck Company B.

WASHINGTON, D. C., July 1, 1881.

SIR: I respectfully submit the following list of property in charge of Truck B. This company occupies a two-story brick house, in good condition, located on the corner of New Hampshire avenue and M street.

SITTING AND SLEEPING ROOMS UPSTAIRS.

24 walnut chairs.	26 white spreads.
1 sofa.	12 towels.
1 library case.	2 chandeliers.
3 carpets.	24 globes.
2 looking-glasses.	1 large center-table.
10 window-curtains.	1 large cover.
12 iron bedsteads.	2 mats.
12 springs.	1 old rug.
12 hair mattresses.	1 clock.
12 hair pillows.	1 writing-desk.
4 double blankets.	8 tin spittoons.
24 sheets in good order.	1 large stove, old.
24 old.	1 stair-carpet and rods.
24 pillow-cases.	

SITTING-ROOM DOWNSTAIRS AND HALLWAYS.

9 oak chairs.	2 tin spittoons.
1 center-table and cover.	2 mats.
1 carpet.	2 pieces oil-cloth.
1 window curtain.	1 piece zinc.
1 old stove.	1 picture fire engineers.
1 key and sounder.	1 telephone.

TILLERMAN DEPARTMENT.

1 Babcock hook-and-ladder truck, in good order.	1 spade.
1 Bangor extension-ladder, 80 feet long, with lever attached.	6 boxes axle-grease.
1 Bangor ladder, 40 feet long, with lever attached.	1 gallon of castor oil.
8 ladders of different lengths.	4 cotton mops.
4 poles belonging to Bangor ladders.	2 signal lamps for truck.
1 platform and turn-table combined, chief engineer Cronin's patent for raising large ladder.	2 dozen bolts.
1 grapple-hook, with chain attached.	1 pair of pliers.
1 battering-ram.	1 hammer.
2 gas or water keys.	4 old files.
2 crowbars.	1 old smoke cap.
4 Johnson pumps.	1 dozen lamp-wicks.
1 auger.	4 gallons coal oil.
1 pair of wire pliers.	1 new life-line.
1 leather-punch.	5 pounds of cotton waste.
1 pair of tinner's snips.	1 pair of plumber's tongs.
1 monkey-wrench.	3 chamois skins.
3 smoke caps.	2 pieces of sponge.
4 pitch-forks.	2 pounds of plumbago.
4 ladder-straps.	1 gas key.
3 street-lines.	4 small side-hatchets.
3 life-lines.	2 pounds of copper wire.
4 brooms.	3 ax-handles.
8 small side-hatchets.	2 oil-cans.
4 pick-axes.	2 monkey-wrenches..
2 plain axes.	1 screw-driver.
4 new hand-lanterns.	3 door-springs.
3 old hand-lanterns.	1 canvas bag.
1 signal lamp.	25 feet of rope.
1 large locomotive head-light for truck.	1 iron block.
3 shovels.	1 vise.
2 Babcock fire-extinguishers.	2 coal-oil cans.
14 gum fire buckets.	3 pounds of oxalic acid.
1 jack-screw.	2 pipe-holders.
3 wrenches.	2 extra poles.
	1 old ladder, been broke.
	3 boxes of charges fire extinguishers.
	8 hooks of different lengths.
	1 wall-pick.
	1 grindstone.

HOSTLER DEPARTMENT.

2 horses, in good condition.	2 horse buckets.
1 old.	2 pitchforks.
2 sets of double harness, new.	2 stable brooms.
2 sets old.	1 pair snips.
2 sets pole straps.	1 feed sieve.
2 sets traces.	1 tin water pot, old.
6 hitching straps.	1 trap hook.
2 pair horse clippers.	1 iron water trough.
1 pair shears.	1 extra set bridles.
4 horse blankets.	1 mop.
2 hoods.	1 feather duster.
1 pair summer spreade, old.	1 harness punch.
4 curry combs.	1 peck salt.
4 horse brushes.	1 small frame feed house.
2 cotton dusters.	15 bushels oats.
1 pair 4-horse reins.	4 bushels bran.
1 extra set reins.	2 bushels meal.
1 pair surcingles.	$\frac{1}{2}$ bushel flax-seed meal.
1 saddle.	600 pounds hay.
2 extra sets pole snaps.	300 pounds straw.
2 sets halter straps.	

STORES ON HAND.

15 pounds castile soap.	6 lamp globes.
10 pounds brown.	2 packages kalsomine.
24 papers tripoli.	$\frac{1}{2}$ gallon lard oil.
24 sheets crocus cloth.	1 gallon boiled oil.
15 sheets emery cloth.	$\frac{1}{2}$ gallon turpentine.
24 cotton mops.	1 pound green paint.
3 curry combs.	4 spring catches for doors.
3 horse brushes.	2 saw sets.
2 feather dusters.	2 monkey-wrenches.
1 quart arnica.	4 clothes hooks.
6 papers stove polish.	2 lamp stays.
2 dust pans.	1 wall pick.
2 dust brushes.	4 pickaxes.
1 dozen corn brooms.	1 reducer.

MISCELLANEOUS ARTICLES.

5 tons stove coal.	1 brace.
2 tons splint coal.	12 bits, of different sizes.
$\frac{1}{2}$ cord sawed and split wood.	4 saws, of different sizes.
1 water cooler.	1 pair snips.
1 step ladder.	3 planes.
1 copper kettle.	6 chisels.
2 dust pans.	1 oil can.
2 dust brushes.	1 trowel.
1 feather duster.	1 hatchet.
2 14-inch hair brushes.	2 files.
2 wall brushes.	1 spokeshave.
4 coal hods.	1 oil stone.
1 paint brush.	1 putty knife.
2 whitewash brushes.	1 pair hinges.
2 old buckets.	4 quart cups.
2 mops.	75 feet street hose.
1 chamois skin.	1 record book.
15 sheets tin.	1 requisition book.
2 alarm keys.	1 ledger book.
1 relief key.	1 coal shovel.
1 hose-carriage bell.	

EXTRA APPARATUS ON HAND.

1 old Amoskeag engine, in good order.	1 extra hose carriage, in good order.
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List of members of Truck B.

Name.	Age.	Occupation.	Residence.
George Spilman.....	37	Laborer	2131 Pennsylvania avenue.
John Sherman.....	36	do	1831 R street.
Daniel Williams.....	40	do	1212 Twenty-fourth street.
Charles Boos.....	30	Wood-turner	1926 K street.
William Whitmore.....	24	Hostler	409 Fourteenth street.
Charles McCarthy.....	30	Carpenter	915 Fifteenth street.
William French.....	37	Laborer	1018 Twentieth street.
Herod Osborn.....	30	Clerk.....	Twenty-first street, between M and N streets.
Richard Sweeney.....	28	do	Sixth and South A.
James Fleet.....	29	School-teacher.....	1549 T street.
John Hyland.....	29	Laborer	Twenty-first, between L and M streets.
John Walker.....	44	Watchman	Potomac street, Georgetown.

Respectfully submitted.

GEORGE SPILMAN,
Foreman Truck B.

MARTIN CRONIN,
Chief Engineer, District of Columbia Fire Department.

APPENDIX G 3.

REPORT OF FIRES.

TABLE A.—Detailed statement of fires, losses, and insurance for year ending June 30, 1881, accompanying report of chief engineer.

No. of fire.	Date.	Hour.	Box.	Style of building.	Cause.	How occupied.	Owner or occupant.	Location.	Dam- age.	Insur- ance.
1 st	1880.	a. m.								
2	July 4	1.10	25	Frame	Fire-crackers	Dwelling	Mrs. Thompson	8th, near M. n. w.	\$50	
3	July 4	2.15	217	do	do	do	Dr. Fardon.	In country.	250	
4	July 4	8.50	423	do	Sky-rocket	Stable	H. Blunt.	do	Slight.	
5	July 8	1.00	613	do	Incendary	Grocery store.	J. Scott.	Corner 3d and H. n. e.	do	
6	July 8	1.00	126	Brick	Gas explosion	Dry goods.	William Brown	817 Market Space	150	\$150
7	July 12	2.10	72	do	Incendary	Church	Mount Zion.	Mill street near West Georgetown.	2,000	2,000
8	July 13	4.05	26	do	Chemical explosion	Drug store.	A. Klockias	9th, between D and E. n. w.	300	300
9	July 21	8.28	23	Tar-pot.	Boiling over		William H. Mohler	Corner North Capitol and New Jersey avenue	Slight	
10	July 22	1.55	126	Brick	Incendary	Livery stable.	J. Kalher.	8th, between D and E. n. w.	5,000	
11	July 23	8.56	126	do	Stove	Dwelling	Tenements.	8th and D. n. w.	Slight	
12	July 24	2.28	126	do	Incendary	Stores	G. Mattingly	8th and E. n. w.	100	100
13	July 24	2.10	613	Frame	do	Dwelling	Mrs. Curran	7th, between D and C. n. e.	100	
14	July 27	3.26	54	do	Caught from kiln	Brick-kiln	Kilballe	2d and N. s. e.	50	
15	July 27	1.10	27	do	Caught from oven	Bakery	D. Volland	907 N street, n. w.	200	200
16	July 31	3.15	39	do	Incendary	Dwelling	M. Welsh.	Alley, between 24th and 25th, n. w.	Slight	
17	Aug 18	8.10	214	do	Coal-oil	do		Kingman street, n. w.		
18	Aug 26	8.35	38	do	False alarm	Junk shop	J. Collins	3d and C streets, s. w.	150	150
19	Aug 28		41	Frame	Spontaneous combustion	Dwelling	M. Augenstein	817 7th street, n. w.	Slight.	
20	Sept 1	6.34	125	Brick	Coal oil	Carpenter shop	G. W. Corbett	903 E street, n. w.	150	
21	Sept 4	2.23	124	Frame	Accident	Dwelling	William Bradley	O street, between 6th and 7th s. w.	Slight	
22	Sept 17	10.42	46	do	Stove	Restaurant	Harvey's	Corner 7th and E. n. w.	200	
23	Sept 18	2.03	124	do	False alarm	Stable	Hothentimer	Corner 11th and O. n. w.	200	200
24	Sept 25	6.05	212	Brick	Unknown	Ice-cream saloon	Plant's building	New York avenue and 15th street, n. w.	300	300
25	Sept 26	3.30	143	do	Unknown	Grocery store.	Thomas Carroll	Corner 11th and D streets, n. w.	2,000	2,000
26	Oct 11	3.15	412	Frame	Incendary	Stable	Dr. Smith	11th, near M. n. w.	100	100
27	Oct 11	11.30	135	do	do	do		Water and High streets, Georgetown	1,000	1,000
28	Oct 17	1.00	721	Brick	do	Feed store.		Water street, s. w.		
29	Oct 19	10.00	213	do	False alarm	For tar barrel.				
30	Oct 28	3.12	415	Frame	do	Ice company				
31	Oct 28	11.35	126	do	Smoky flue	School-house		High and Market, Georgetown	400	400
32	Oct 30	4.04	73	Brick	Unknown	do	City			
33	Nov 3	5.52	123	Brick	False alarm	Dwelling	Captain Gillies	215 A street, s. e.	Slight	
34	Nov 5	10.59	52	Brick	Stove	do	J. Taylor	7th and East Capitol streets.	300	300
35	Nov 8	0.56	512	Frame	Unknown	Hotel	Barnes	1002 Pennsylvania avenue, n. w.	300	300
36	Nov 16	11.14	128	Brick	Children—matches.	do		H street, 20 and 21, n. w.	200	200
37	Nov 16	1.35	31	do	False alarm	do				
38	Nov 18	7.09	312	Frame	Forge	Blacksmith	L. P. Wright	Alley, between 9th and 10th, s. w.		
39	Nov 20	9.53	423	do	Coal oil	Dwelling	W. Riley	Fayette, above 3d and 4th, Georgetown.	400	400
40	Nov 22	2.09	712	do	Unknown	do	D. Jones			

No.	Date	Material	Cause	Description	Name	Address	Value	Remarks
10 ⁶	Nov. 27	1. 10	Accident	Coal oil	T. Farncop	Pennsylvania avenue, between 14th and 15th streets, n. w.	400	Slight
1	Dec. 8	0.02	Furnace	Hot-house	Mrs. Jackson	18th and K streets, n. w.	1,200	do
2	Dec. 7	0.20	Incendiary	Defective stove	W. R. Welker	18th street e, opposite jail	1,500	Slight
3	Dec. 7	8.15	Defective stove	do	Rev. Richardson	918 9th street, n. w.	600	do
4	Dec. 7	8.00	Incendiary	do	M. Solomon	Massachusetts avenue, between 9th and 10th	600	do
5	Dec. 7	9.16	Incendiary	do	W. S. R. R.	7th, between Maryland avenue and D, s. w.	100	do
6	Dec. 9	0.39	Stove	do	G. Johnson	1st and Maryland avenue, s. w.	400	do
7	Dec. 10	8.45	Spontaneous combustion	False alarm	J. F. Bradley	Massachusetts avenue, between 3d and 4th, n. e.	250	Slight
8	Dec. 11	4.26	Gas jet	Stove pipe	J. F. Ford	2133 L street, n. w.	100	do
9	Dec. 12	11.48	Box sashes	False alarm	C. Meron	C and Louisiana avenue, n. w.	300	do
10	Dec. 13	11.22	Furnace	Unknown	William Leeman	1300 9th street, n. w.	300	do
11	Dec. 15	9.35	Matches—children	do	Captain Heintzelman	424 New York avenue	800	Slight
12	Dec. 16	5.23	False alarm	do	Washington Gas Company	B, between 4th and 5th, s. e.	100	do
13	Dec. 18	8.52	False alarm	do	do	14th, between N and O, n. w.	300	do
14	Dec. 20	5.28	False alarm	do	do	21st and H streets, n. w.	1,500	Slight
15	Dec. 25	6.13	False alarm	do	do	G street wharf	50	do
16	Dec. 25	2.08	False alarm	do	do	7th and B streets, n. w.	200	do
17 ¹⁰	Dec. 31	12.45	False alarm	do	do	1125 N street, n. w.	200	do
1	Jan. 1	9.10	False alarm	do	do	225 C street, n. e.	200	do
2	Jan. 2	12.45	False alarm	do	do	New York avenue	200	do
3	Jan. 4	6.32	False alarm	do	do	13th near O street, n. w.	200	do
4	Jan. 12	1.50	False alarm	do	do	3519 O street, n. w.	200	do
5	Jan. 13	10.50	False alarm	do	do	Corner 22d and D, n. w.	2,000	do
6	Jan. 16	12.21	False alarm	do	do	Corner Louisiana avenue and 10th, n. w.	1,200	do
7	Jan. 19	12.00	False alarm	do	do	22d, between K and L, n. w.	150	do
8	Jan. 20	11.34	False alarm	do	do	Corner 11th and G, n. w.	800	do
9	Jan. 25	5.50	False alarm	do	do	Pennsylvania avenue, between 4th and 3d	150	do
10	Jan. 28	7.13	False alarm	do	do	3d and Maryland avenue, s. w.	2,500	do
11 ¹¹	Jan. 31	2.10	False alarm	do	do	10th, between Louisiana avenue and C, n. w.	500	do
1	Feb. 6	12.20	False alarm	do	do	3502 M street, n. w.	1,800	do
2	Feb. 8	11.02	False alarm	do	do	11th and Q streets, n. w.	1,500	do
3	Feb. 11	7.08	False alarm	do	do	15th and P streets, n. w.	1,500	do
4 ¹²	Feb. 12	11.07	False alarm	do	do	10th and K streets, n. w.	1,500	do
5	Feb. 12	7.16	False alarm	do	do	do	1,500	do
6 ¹³	Feb. 15	3.09	False alarm	do	do	do	1,500	do
1	Mar. 2	2.42	False alarm	do	do	do	1,500	do
2	Mar. 4	6.40	False alarm	do	do	do	1,500	do
3	Mar. 4	6.52	False alarm	do	do	do	1,500	do
4	Mar. 8	6.05	False alarm	do	do	do	1,500	do

1 Three local fires.
 2 Fireman Burroughs burnt.
 3 Loss, \$3,200; insurance, \$7,750.
 4 Child slightly burnt.
 5 Loss, \$150; insurance, \$150.
 6 Loss, \$850; insurance, \$500.
 7 Loss, \$3,500; insurance, \$3,500.
 8 Loss, \$2,000; insurance, \$900.
 9 Two children burnt to death, 6 and 9 years.
 10 Loss \$4,200; insurance \$3,000.
 11 Loss \$3,750; insurance \$1,400.
 12 Two men injured.
 13 Loss \$4,100; insurance \$4,100.

APPENDIX G 3.

TABLE A.—Detailed statement of fires, losses, &c.—Continued.

No. of fire	Date	Hour	Box	Style of building	Cause	How occupied	Owner or occupant	Location	Dam- age.	Insur- ance.
5	1881. Mar. 9	a. m. 4 10	35	Frame	Incendiary Matches	Dwelling		19th and D streets, n. w.	\$100	
6	Mar. 12	6 34	315	Brick		Hospital		Pennsylvania avenue, between 24th and 25th.	200	
7	Mar. 14	3 08	13	do	Stove	Dwelling		McDermott's alley, n. w.	Slight	
8	Mar. 18	2 02	126	do	Defective flue	Offices		14th, between F and Pennsylvania ave- nue.	do	
9	Mar. 21	4 29	62	do	do	Dwelling	M. Crayton	Testreet, between 1st and North Capitol	100	\$100
10 ¹	Mar. 24	8 20	314	Frame	Coal oil	do	M. Smith	23d, between F and G, n. w.	100	
1	Apr. 1	10 50	136	do	Incendiary	Restaurant	Mrs. Maguire	14th and E, n. w.	1,000	1,000
2	Apr. 3	11 15	35	do	do	Dwelling	M. Sullivan	22d, near 6th, n. w.	400	
3	Apr. 5	2 30	314	Brick	Chimney sparks	do	Puluaki	K, near 24th, n. w.	400	400
4	Apr. 6	4 59	132	Frame	do	do	F. Johnson	C, near 14th, n. w.	Slight	
5	Apr. 10	1 30	126	Brick	Smoky flue	Barber-shop	Coleman	8th and D	100	100
6	Apr. 11	8 15	43	do	Hot ashes	Wood-sheds	F. McCaulley	F, between 4th and 6th	100	100
7	Apr. 11	8 30	41	Frame	Lamp explosion	Dwelling	E. Day	406 Tin-Cup alley	Slight	
8	Apr. 15	9 19	72	Brick	do	School-house	City	25th and East streets, Georgetown	do	
9 ²	Apr. 19	10 55	12	Frame	Defective flue	Dwelling	J. Lashy	3d and D, n. w.	100	100
1	May 1	9 00	39	Brick	Unknown	Brewery	Chris. Heinrich	22d and M street, n. w.	3,000	1,500
2	May 1	2 45	121	do	Matches	Hotel	A. Brigazzi	Pennsylvania avenue, between 3d and 4th, n. w.	Slight	
3	May 4	5 47	124	do	Explosion—gas	Dwelling		5th, between E and F streets, n. w.	do	
4	May 5	11 48	56	Wood-sheds		Wood-sheds		Misconri avenue and 3d n. w.	do	
5	May 11	4 05	121	Brick	Spontaneous combustion.	Coach-shop	McDermott's	1528 16th street, n. w.	do	
6	May 25	2 50	214	Frame	Matches—children	Shed	H. James	Water street, Georgetown	100	100
7 ¹	May 27	6 40	731	do	Accident	Wheel-shop	J. Muntz	Temperance alley	1,500	800
1	June 9	1 59	126	Brick	Incendiary	Stable	George Wanback	Pennsylvania avenue and 24th, n. w.	50	
2	June 12	9 00	315	do	Cigar store	do	District govern- ment.			
3	June 15	3 22	125	do	Incendiary	Fur-store	Rutherford	K street, near 7th, n. w.	1,200	
4	June 15	5 11	52	Frame	Matches—children	Shed	Butt's	East Capitol, n. e.	20	
5	June 22	11 55	214	do	Incendiary	Stable	Mrs. K. Whiting	Kimman place, n. w.	200	200
6 ⁴	June 30	12 55	28	do	do	Baptist church.		10th and V streets, n. w.	200	

* Loss \$3,800; insurance \$3,100.

* Loss \$2,100; insurance \$1,700.

* Loss \$1,800; insurance \$2,200.

* Loss \$1,070; insurance \$400.

TABLE B.—Statistics of number of fires which occurred in the District of Columbia from the organization of the paid fire department to the present time.

Year.	No. of fires.	Lossee.	Year.	No of fires.	Losses.
1865	55	\$121,500	1874	109	\$99,500
1866	95	250,000	1875	132	68,000
1867	55	101,000	1876	121	46,230
1868	53	138,000	1877	131	*90,900
1869	87	153,000	1878	75	16,950
1870	127	118,000	1879	114	81,400
1871	97	200,000	1880	169	132,450
1872	95	141,000	1881	97	38,920
1873	139	161,500			

* Patent Office fire not included.

APPENDIX G 4.

REPORT OF SUPERINTENDENT OF FIRE-ALARM TELEGRAPH.

OFFICE FIRE-ALARM TELEGRAPH,
Washington, D. C., September 8, 1881.

GENTLEMEN: By direction of the honorable Commissioners of the District of Columbia, I have the honor to transmit, through you, my annual report of the current transactions of the fire-alarm telegraph for the fiscal year ending June 30, 1881; also, an estimate of the amount required for the support of this department for the fiscal year ending June 30, 1883; also, some suggestions for increasing the efficiency of this branch of the public service.

During the fiscal year covered by this report there were one hundred and seven alarms of fire by telegraph. In July, 1880, there were 15 alarms; August, 3; September, 6; October, 7; November, 10; December, 17; January, 1881, 11 alarms; February, 6; March, 10; April, 9; May, 7; June, 6. Total, 107.

During the year the old line of poles leading from Fifth and D streets northwest to and through Georgetown has been removed, and new ones substituted, at an expense of about \$1,000. The telephone service has also been greatly improved, by so increasing the number of talking-circuits that each fire company and the officers of the department are on separate wires, but so arranged that any two or more of the circuits can be united in the central office, thus connecting any or all of the circuits, as may be required. Magneto call-bells are used on these talking-circuits for calling the company or officers wanted, and give good satisfaction.

The fire-alarm telegraph covers portions of Washington and Georgetown, but quite an extensive portion of each are practically but little benefited by the fire-telegraph, as will more fully appear further on in this report.

The fire-telegraph aggregates about 200 miles in length of wire, divided into 23 circuits—11 metallic circuits and 12 ground circuits (the latter for telephone service). There are 80 signal-boxes and 22 gong and bell strikers.

The lines and instruments are in good order and continue to work in a very satisfactory manner.

The total expenditures for the fire-alarm service during the year

amount to \$6,928.62, including the salaries of superintendent and two operators.

To increase the efficiency of the fire-telegraph I recommend the introduction of not less than 75 additional signal-boxes, for the reason that the city has grown so rapidly that large areas are so remote from alarm-stations as to derive little or no benefit from the fire-telegraph. I do not deem it necessary to argue the matter; it must be apparent to all, and needs only to be mentioned by way of a reminder.

An additional operator and two repairmen should also be added to the force of this office, and I earnestly request that it be done, because of real necessity for such additional help.

The cost of procuring 75 additional signal-boxes and enlarging the circuits and putting in operation I estimate at \$15,000.

To defray the expenses of the fire-telegraph for the fiscal year ending June 30, 1883, provision should be made for—

Salary for one superintendent.....	\$1,800 00
Salary for three operators, at \$1,200 each	3,600 00
Battery supplies and new battery	1,800 00
Labor and repairs.....	2,500 00
Salary for two repairmen, at \$720 each	1,440 00
Gas-light	100 00
Fuel.....	40 00
Rent of office-rooms	300 00
Ice	30 00
Washing.....	30 00
Blacksmithing	30 00
Contingent expenses.....	300 00
Total	11,970 00

In conclusion, I desire to thank the Commissioners of the District of Columbia, also the commissioners, officers, and members of the fire department, for their courtesy and helpful co-operation in bringing this branch of publicservice to its present state of efficiency. My thanks are also due and tendered to Messrs. Richards and Noyes, the operators, and Thomas Parker, the repairman, for their efficient and faithful services since my last annual report. All of which is respectfully submitted.

I have the honor to be, gentlemen, your obedient servant,

HENRY R. MILES,

Superintendent Fire-alarm Telegraph.

The BOARD OF FIRE COMMISSIONERS
of the District of Columbia.

H.—REPORT OF THE ATTORNEY.

OFFICE OF THE ATTORNEY
FOR THE DISTRICT OF COLUMBIA,
Washington, October, 1881.

GENTLEMEN: The business of this office for the past year consisted entirely of its usual routine duties, meeting the Commissioners for consultations, writing opinions as required, disposing of referred cases, and in attendance upon all the courts when in session, in care of the numerous cases to which the District is a party.

In noticing the further history of the cases referred to in the last report, I observe that the Strong cases still occupy the attention of our courts. As will be remembered, the two original cases were consoli-

dated and were tried together as one case till the memorable overthrow of Strong heretofore noted in these reports, after which they were severed, and it was the first of these, so long and faithfully tried by my assistant, Mr. Miller, aided by Mr. Carusi.

Since the last disaster described in my last report, Strong's counsel have endeavored to transfer the cases to the Court of Claims, under the act of Congress conferring upon it jurisdiction of claims against the District. Of the one untried in the District court, little doubt could exist of his right to remove it to that forum, if the District had not acquired rights by its set-off. It is clear, I think, that our court will retain jurisdiction of the other. Indeed, since the close of the year the court has denied Strong's motion to dismiss the case without prejudice.

The Young case remains as last reported, and is probably substantially disposed of in the District's favor.

The Morgan case was for work and labor on the James Creek Canal. The auditor reported in favor of the plaintiff, Morgan, the sum of \$122,447. On hearing our exceptions to the auditor's report, the court reduced this to \$3,049.92, which heads our list reported September 29, 1881, for estimates.

Browning vs. The District: On the second trial the District was again successful, and the plaintiff removed the case to the general term on exceptions, where it has not yet been reached.

The District vs. The Sureties of Lubey, late water registrar: Case awaiting trial in the circuit court. I trust the necessary statement of his accounts will be prepared so that the case can be tried. It will be remembered that the commencement of the suit was delayed for a statement of his accounts and was finally commenced in its absence. The case cannot be tried until this is furnished by the officers of the District to this office.

The District vs. The Johnsons, to recover rent of wharf at the foot of Thirteenth street west: The general term reversed our judgment in this case, which awaits retrial.

In the King case, a satisfactory disposition was made by the court, and sale of property ordered. It was found that to secure the rights of the District in the premises, certain legislation of Congress was needed, and the final closing out of the matter awaits the action of that body.

Of some later cases I observe:

The cases of the District against certain street railroads, on account of the work done by the late board of public works for paving, are now pending on demurrer to the declarations in the general term, to which they were certified without hearing by the court below.

New difficulties arose out of an opinion of this office concerning the application of the liquor-license law to the departments of the general government, furnished to the President on his request. This opinion was submitted to the Attorney-General, who never overruled it, but by tacit understanding all the heads of the departments, except the Postmaster-General, disregarded it, and this office held that in the absence of legislation by Congress, these departments might be regarded as other vacant property of the United States.

In the case of Miller & Jones, to compel the issue of a license to them to retail liquor in their building, a part of the National Theater, the chief justice held that they, not being owners or proprietors of the theater, were not within the ordinance prohibiting license. This leaves the licensing of bars in or near theaters by parties not interested as owners of theaters, within the discretion of the Commissioners, like other cases.

Mrs. Parker's case: The judgment in this case, though rendered within

the year, has already been paid, and suit is now pending against the Gas Company to recover the sum so paid, on well-established principles of law recognized and enforced by the United States in a similar case. We have already obtained a judgment against the Baltimore and Potomac Railroad Company, in a similar case, where the District was mulcted in damages. This case is now pending in the general term.

Thompson vs. The District was for a mandamus to compel the Commissioners to issue a draw back with ten per cent. interest to a certificate holder, and refused by MacArthur, justice.

Another suit by the same party, involving the same matter, is at the date of this report pending in general term. I entertain no doubt of the result.

The District vs. Forsyth (at one time deemed of the greatest importance), on trial resulted in the return of the missing books and papers, which were found to be of no great value.

McElligott vs. The District, is a case for injury to the person, in which he has recovered a verdict for \$3,000, and is now pending in the general term on our exceptions. It is one of those unfortunate cases in which a jury will always return a pretty heavy verdict for the plaintiff if the case is submitted to it.

Bailey vs. The District, judgment \$4,000, included in our late list of judgments, is another case of real merit for the plaintiff. The man was rendered totally and permanently helpless, under a condition of things which must have been due to negligence of a gross character on the part of an employé having charge of a highway. I should never expect a more favorable result, and should anticipate a larger verdict on another trial.

Of the new cases commenced, one is to test a patent right in use on the streets; several to test the liability of the District for alleged faults of Tiber Creek sewer, and sewers connected with it. Many other cases, some of importance, have been tried or otherwise disposed of.

Of the late list of judgments, as a whole, I may say that where the claims were litigated, they were zealously defended with all the means at my disposal, and are to be treated as judicially determined liabilities of the District. So in one or two no legal or equitable defense existed, and in this class of cases, where their true character is made to appear, this office interposes no hindrances, and this course has always met the approval of the Commissioners. To me, no other is honorable.

The whole number of civil cases disposed of during the current year is 18.

New cases commenced to which the District is a party, 25.

Whole number pending in the courts of record at the end of the year, 243; law, 115; equity, 128.

Many cases have claimed the attention of my assistants, generally Mr. Miller, before the justices of the peace, and the office has also looked after cases of condemnation of property for roads and highways. The cases appealed from the police court to the criminal court are numerous and perplexing.

The whole number disposed of since the last report is 148.

Appealed and docketed in the same time, 111.

Cases undisposed of at the end of the year, 108.

Amount collected on judgments, \$763.65.

This branch of the duties of the office devolves upon Mr. Miller. By present arrangement with the courts these cases will, as I trust, be disposed of with reasonable promptitude.

In the police court for the current year there have been tried 4,484 cases of all classes.

Whole amount of fines imposed, \$19,654.

The collections make no figure.

The police court is exclusively in the hands of Mr. Padgett, whose report is subjoined.

Of the strictly office business, mainly by the hand of the undersigned, 71 formal opinions have been rendered, covering 200 closely-written pages of the press copy book; to which should be added numerous cases upon the papers of which opinions are indorsed and of which no copies are retained.

There were also the current briefs made up and printed.

I have already furnished estimates for salaries and expenses.

Respectfully submitted.

A. G. RIDDLE,
Attorney, District of Columbia.

Hon. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

APPENDIX H 1.

REPORT OF THE SPECIAL ASSISTANT ATTORNEY.

OFFICE OF THE ATTORNEY FOR THE DISTRICT OF COLUMBIA, *Washington, September 30, 1881.*

SIR: I have the honor to respectfully submit this, my report of cases tried in the police court during the year commencing July 1, 1880, and ending June 30, 1881:

Number of cases tried	4,484
Number of cases convicted	3,980
Number of cases dismissed	383
Number of cases dismissed, license produced	61
Number of cases continued	35
Number of cases nolle prosequi	25
Amount of fines imposed	\$19,654

The above cases consisted of the following kind and number of offenses, to wit:

Bar open after hours	4
Bar open on Sunday	39
Bathing in river	7
Concealed weapons	139
Contempt of court	12
Cow-yards	79
Cruelty to animals	18
Destroying private property	76
Destroying public property	9
Disorderly conduct	1,293
Disorderly conduct, Georgetown	129
Disturbing church	6
Driving over pavement	15
Driving through procession	12
Dropping load from cart	1
Enticing prostitution	2
Excavation without permit	7
Failing to remove snow	356
Fast driving	21
Fast driving over bridge	3
Fighting dogs	4

Firing pistol in street	15
Gift enterprise	1
Indecent exposure	74
Injuring trees	16
Making fire in street	4
Nuisances	60
Obstructing footway	15
Obstructing gutter	16
Obstructing street	45
Occupying street	6
Placing rubbish in street	15
Playing ball in street	6
Profanity	594
Refusing to assist officer	1
Removing sand from street	1
Selling light bread	1
Selling liquor to minors	2
Selling liquor to soldiers	1
Selling liquor on Sunday	6
Selling potatoes by measure	4
Setting off fire-crackers	2
Tapping sewer	1
Throwing stones	65
Trespass on park	57
Tying horse to tree	2
Unlawful bill-posting	1
Unlawful measures	5
Unlawful scales	1
Unlawful weights	1
Unlicensed apothecaries	5
Unlicensed bar	55
Unlicensed billiards	2
Unlicensed cattle dealers	4
Unlicensed commercial agents	15
Unlicensed exhibition	1
Unlicensed hotels	1
Unlicensed intelligence office	1
Unlicensed junk dealer	1
Unlicensed liquor dealers	1
Unlicensed livery stables	1
Unlicensed photographer	1
Unlicensed produce dealers	7
Unlicensed restaurants	1
Unlicensed wagons	1
Using street washer	1
Vagrancy	94
Violating building regulations	4
Violating cart law	2
Violating hack law	2
Violating market regulations	1
Washing carriages in street	1
Watering horses at pump	1

Very respectfully,

JAS. E. PADGETT,
Special Assistant Attorney, D. C.

A. G. RIDDLE, Esq.,
Attorney for the District of Columbia.

APPENDIX H 2.

OUTSTANDING JUDGMENTS AGAINST THE DISTRICT OF COLUMBIA.

OFFICE OF THE ATTORNEY
FOR THE DISTRICT OF COLUMBIA,
Washington, September 29, 1881.

GENTLEMEN: I transmit herewith a list of the outstanding judgments against the District of Columbia.

Respectfully,

A. G. RIDDLE,
Attorney for the District of Columbia.

Hon. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

Name.	When obtained.	Amount.	Interest from—	Costs.
Thomas P. Morgan	Jan. 22, 1881	\$3, 049 92	Oct. 7, 1879	\$104 70
Robert T. Johnson	Oct. 21, 1880	60 00	Oct. 21, 1880	8 70
John J. Shipman	Apr. 14, 1881	3, 000 00	Apr. 14, 1881	25 30
The First National Bank of New York	Apr. 28, 1881	3, 008 88	Aug. 26, 1872	21 00
Hugh Murray's administrator	Feb. 25, 1881	1, 500 00	Feb. 25, 1881	40 65
Michael White	Apr. 18, 1881	750 00	Apr. 18, 1881	53 90
John N. Lee	May 31, 1881	746 00	May 31, 1881	14 75
Cornelius P. Bailey	Mar. 8, 1881	4, 000 00	Mar. 8, 1881	159 90
Adolf Cluss	Feb. 23, 1879	2, 155 00	July 24, 1872	46 55

APPENDIX H 3.

ESTIMATES.

OFFICE OF THE ATTORNEY
FOR THE DISTRICT OF COLUMBIA,
Washington, September —, 1881.

GENTLEMEN: I have the honor to transmit herewith estimates for this office for the fiscal year ending June 30, 1883:

For salary of attorney	\$4, 000
For salary of first assistant attorney	2, 400
For salary of second assistant attorney	1, 200
For salary of clerk	1, 200
For salary of messenger	200
Rent of office	300
Miscellaneous expenses	900

Respectfully,

A. G. RIDDLE,
Attorney for the District of Columbia.

Hon. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

I.—REPORT OF THE CORONER.

CORONER'S OFFICE, DISTRICT OF COLUMBIA,
Washington, D. C., September 13, 1881.

GENTLEMEN: In compliance with your request of August 15, I have the honor to inclose estimate of amount required for the support of this department for the fiscal year ending June 30, 1883; also tabular statement of the transactions of this office for the year ending June 30, 1881.

Very respectfully,

D. C. PATTERSON,
Coroner.

Hon. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

APPENDIX I 1.

ESTIMATE.

Estimate of sums required for the support of the coroner's office for the year ending June 30, 1883.

For salary of coroner.....	\$1,800 00
For contingent expenses, including books, blanks, stationery, payment of coroner's jurors, and autopsies	700 00
Total	2,500 00

Respectfully submitted.

D. C. PATTERSON,
Coroner.

APPENDIX I 2.

Tabular statement of deaths certified by the coroner during the year ending June 30, 1881.

Wilful violence:

Suicide:

By incised wounds.....	2
By irritant poison.....	3
By narcotic poison.....	1
By drowning.....	2
By hanging.....	2
By jumping from window.....	1

Homicide:

By gunshot wounds.....	3
By punctured wounds.....	1
By weapons and missiles.....	5
By infanticide.....	9
By neglect at birth.....	11

Accidents and negligence:

Burns.....	3
Crushed by elevator.....	1
Drowning.....	11
Exposure to cold.....	2
Fracture of neck.....	3
Fracture of skull.....	2
Fracture of spine.....	1
Gunshot wounds.....	5
Irritant poison.....	1
Narcotic poison.....	1
Overlaid by mother.....	6
Premature birth.....	2

Run over by railroad cars, &c	11
Rupture of liver	1
Still births (known)	20
Still births (unknown)	31
Stroke	2
Tetanus traumatic	1
Umbilical hemorrhage	3
Diseases :	
Abscess, scrofulous	1
Aneurism of aorta	1
Angina pectoris	2
Apoplexy	16
Asthenia	6
Bright's disease	2
Bronchitis, capillary	29
Bronchitis, chronic	4
Cancer of breast	1
Cholera infantum	19
Cholera morbus	2
Colic	1
Congestion of brain	5
Congestive chill	3
Congestion of lungs	22
Convulsions, infantile, and trismus nascentium	45
Convulsions	3
Croup	10
Debility, congenital	48
Debility, senile	13
Dentition	1
Diarrhœa	24
Diphtheria	1
Dropsy	2
Dropsy of heart	2
Dysentery	1
Embolism	2
Epilepsy	2
Fever, intermittent	3
Fever, typhoid	1
Gastritis	1
Hemorrhage of bowels	2
Hemorrhage of lungs	12
Hemorrhage, uterine	2
Heart disease	18
Hernia, strangulated	1
Hydrocephalus	2
Inanition	14
Intussusception	2
Measles	1
Metro-peritonitis	1
Paralysis	2
Peritonitis, puerperal	3
Phthisis pulmonalis	35
Pleuritis	1
Pleuro-pneumonia	1
Pneumonia	27
Rupture of renal artery	1
Tabes mesenterica	1
Uræmia	1
Total suicides	11
Total homicides	9
Total infanticides, &c	20
Total by accidents and negligence	107
Total by disease	400
Total of all cases certified by the coroner	547

Whole number of white deaths, 158=29.15 per cent.
 Whole number of colored deaths, 384=70.85 per cent.
 Color unknown, 5.

Occupation.

Actuary	1	Hostler	1
Agent	1	Housekeeper	15
Barber	3	Huckster	2
Blacksmith	2	Laborer	44
Boarding-house-keeper	1	Laundress	4
Bookkeeper	1	Manufacturer	1
Brakeman	1	Messenger	2
Brewer	1	Molder	1
Bricklayer	2	Painter	2
Butcher	2	Peddler	1
Carpenter	1	Physician	1
Cigarmaker	1	Plasterer	1
Clerk	1	Professor of music	1
Coal dealer	1	Prostitute	2
Cook	1	Publisher	1
Draftsman	1	Restaurant keeper	2
Dressmaker	2	Sailor	2
Druggist	2	Seamstress	3
Engineer	1	Servant	16
Farmer	1	Shoemaker	2
Fireman	3	Soldier	9
Fresco painter	1	Student	1
Gardener	3	Switchman	1
Grocer	3	Watchman	1
Hack driver	1	Remaining	393

Nativity:

District of Columbia	372
Other parts of the United States	133
Ireland	25
Germany	12
England	2
France	1
Belgium	1
Unknown	1

Social relation, above the age of 20 years.

Sex and color.	Widow or widower.	Married.	Single.	Total.
White, male	2	35	20	58
White, female	14	18	7	39
Colored, male	5	23	20	48
Colored, female	17	22	7	46

Recapitulation.	Total deaths.	White.		Colored.	
		Male.	Female.	Male.	Female.
Zymotic diseases	80	9	6	29	36
Constitutional diseases	50	4	10	23	13
Local diseases	201	31	15	78	77
Developmental diseases	74	11	11	23	29
Violence	86	33	15	21	17
Still births	51	8	5	22	16
Unknown	5				
Total	547	96	62	196	188

Age.	White.	Colored.	Total.
Under 1 month.....	22	93	115
Between 1 month and 1 year.....	11	89	100
1 to 5 years.....	3	54	57
5 to 10 years.....	4	6	10
10 to 20 years.....	7	7	14
20 to 30 years.....	11	18	29
30 to 40 years.....	28	27	55
40 to 50 years.....	18	13	31
50 to 60 years.....	16	10	26
60 to 70 years.....	14	7	21
70 to 80 years.....	9	8	17
80 to 90 years.....	2	8	10
90 to 100 years.....	2	3	5
Over 100 years.....		1	1

Monthly mortality.

July.....	61
August.....	36
September.....	64
October.....	47
November.....	42
December.....	37
January.....	37
February.....	46
March.....	43
April.....	51
May.....	37
June.....	46

I certify the foregoing statement is correct.

D. C. PATTERSON, M. D.,
Coroner, District of Columbia.

K.—REPORT OF THE MAJOR OF POLICE.

DEPARTMENT OF METROPOLITAN POLICE,
OFFICE OF THE MAJOR AND SUPERINTENDENT,
Washington, D. C., September 1, 1881.

GENTLEMEN: I have the honor to present this the twentieth yearly report of the condition and operations of the Metropolitan police force of the District of Columbia for the year ended 30th June, 1881, being a classified statement showing the disposition of the force by precincts, time lost by sickness and other causes, number of arrests, according to sex, in the several precincts, the ages of males and females thus arrested, their nationality, trade, or occupations, with other information having reference to the routine duties of this department; the report of the board of surgeons, sanitary officer, and property clerk; property at headquarters and in each of the stations; estimates of the amount of money required for the support of the department during the fiscal year ending 30th June, 1883, said estimates being based on the number of the force at present authorized by law, with various suggestions and recommendations which in my opinion will tend to the welfare and better protection of the community and add to the efficiency of this department.

INCREASE OF THE FORCE.

In connection with this subject, one of vital importance to the welfare of our community, I can do little more than repeat the numerous reports and recommendations made in previous annual reports on the same.

The Board of Commissioners are doubtless as well aware of the insufficiency in numbers of the present force as I am, but in view of the serious responsibility of this department in all matters connected with the protection of lives and property jeopardized by such deficit, I must again state that no amount of vigilance, or the greatest possible efficiency, can make up for the shortage in this respect.

A policeman, like any other man, can do no more than his best. I am satisfied that every member of the force is striving to that end. Anything short of such exertion is soon discovered, and the proper remedy applied, but yet it is impossible for the present number of patrolmen to give due protection to the lives and property under their guardianship.

When the present number of patrolmen was authorized, the population of this District was 88,879; it is now more than double that number. The value of property belonging to citizens and the general government has increased in greater proportions, but without any corresponding increase in the number of policemen to guard such enlargement.

I would, therefore, earnestly recommend that the force be increased by the addition of one captain (as night inspector), seven sergeants, two hundred and fifty privates or patrolmen.

STATION HOUSES.

Of the eight station houses in use by this department, only three, viz, the third, fourth, and eighth precincts are owned by the District. Being built for the purpose, they are the only ones fit for that service, the others being defective in many very essential points; the prisoners' cells, water closets, and lodgers' rooms being too near the sleeping rooms of the officers and privates, very often causing loss of rest and sleep to the tired patrolmen and sergeant. It is also found very difficult to prevent foul orders emanating from said cells and rooms, especially at night when occupied by prisoners and lodgers. Another very great defect is the faultiness of the drainage; a fault which cannot be overlooked as it causes sickness and consequent loss of service in a force so unable to bear it, in which the absence from duty of even one man is seriously felt.

I cannot too strongly recommend that the system of renting private dwellings for station-house purposes be abandoned, and that structures built and owned by the District take the place of the ones now rented.

INFIRM MEMBERS OF THE FORCE.

I beg leave to renew my former recommendation in regard to members of the force whose efficiency has been seriously impaired by their many years of active duty. They have been faithful and untiring in the performance of the work assigned to them, and are willing to-day to attempt, at least, the same amount of duty which the younger and more able-bodied men are better able to execute. But their age renders their service to a certain degree inefficient, and their places should be filled by men whose quick, sharp perceptions are needed in the prevention of

crime and in the detection of the criminals when crime has been committed. At the same time it would be a positive wrong to remove these men, after twenty years' faithful service, without making some provision for their old age. This matter is one that requires earnest attention, and I again respectfully recommend that provision be made for the retirement of such members of the force as are incapable of performing thorough police duty, whether such incapacity be caused by long service or disabled in the line of duty.

When this is done the *personnel* of the force will be greatly improved.

In connection with this subject the following table exhibits the year of appointment of the 200 privates at present constituting the patrolmen of the force:

1861.....	13	1873.....	11
1862.....	4	1874.....	5
1863.....	1	1875.....	16
1864.....	8	1876.....	7
1865.....	2	1877.....	3
1866.....	7	1878.....	22
1867.....	19	1879.....	13
1868.....	8	1880.....	17
1869.....	12	1881.....	4
1870.....	8		
1871.....	13		200
1872.....	7		

DISCIPLINE OF THE FORCE.

The superintendent confidently believes that the discipline of the force will compare favorably with that of any similar organization in the country. In the maintenance of the rules and regulations laid down for our guidance, seventy-four members of the force were cited before the trial board during the past year, for violations thereof, viz:

For desertion.....	1
Gross neglect of duty.....	6
Insubordination.....	1
Intoxication.....	3
Intoxication on duty.....	5
Neglect of duty.....	13
Miscellaneous violation of rules and regulations.....	45
	<hr/> 74

DISPOSITION OF POLICE TRIALS.

Cationed.....	2
Charges dismissed.....	23
Dismissed the force.....	5
Dismounted and transferred.....	1
Fined \$5.....	6
Fined \$10.....	2
Fined \$10 and reprimanded.....	2
Fined \$20.....	1
Fined \$25.....	3
Fined \$25 and reprimanded.....	2
Fined \$50 and reprimanded.....	1
Reduced to lowest grade of private.....	3
Reprimanded.....	1
Required to pay their debts.....	22
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ST. ANN'S ASYLUM.

During the past year, as in previous ones, this department has been greatly indebted to the ladies of St. Ann's Asylum.

Kindly and readily were the numerous waifs of humanity, thrown by

unfeeling parents on the mercy of the world, received by them, thereby relieving us from what, though not very large, would, in many cases, prove a serious responsibility.

I would recommend that measures be taken to reimburse the asylum for the time, care, and expense thus voluntarily given.

CHARITY.

Under this heading I would state that this office received from the "appropriation for relief of the worthy poor," during the past year, \$400. This small amount was carefully expended or distributed to parties actually suffering for lack of the necessities of life.

The past winter being unusually long and severe, the suffering of our poor was large in proportion, and numerous cases of destitution were brought to the attention of the police, in which we were unable to afford relief.

In this emergency our citizens, ever prompt to the call of suffering, whether in this city or elsewhere, called a meeting for the purpose of considering what means could be taken to decrease and relieve the wants of the poor in our midst. The call was heartily responded to, and during the past winter \$11,751.33 was contributed as the result of such call.

This large amount was expended and distributed through and by this department under the control of the honorable commissioners.

As to the manner in which this department expended and distributed the above amount, allow me to copy the report of a committee appointed by Judge A. B. Hagner for that purpose:

Messrs. REGINALD FENDALL, F. B. MCGUIRE, and LEWIS J. DAVIS:

GENTLEMEN: The Commissioners of the District of Columbia, to whom was intrusted the disbursement of the funds collected for the relief of the poor under a resolution passed at the Willard Hall meeting, in January last, have notified the undersigned that their accounts of receipts and expenditures are ready for examination, and have requested the appointment of a committee of citizens for that purpose.

You have been selected as gentlemen who, it is believed, will be willing to give a part of your time to the public to perform this service.

We hope you will be able to make the requisite examination, and report the result in such form as may be published in the newspapers.

We are, gentlemen, with much respect, your obt. servants,

A. B. HAGNER, *Chairman*.

JNO. A. BAKER, *Secretary*.

WASHINGTON, D. C., June 25, 1881.

Hon. A. B. HAGNER, *Chairman*; JOHN A. BAKER, Esq., *Secretary*:

GENTLEMEN: The committee appointed by you to audit the accounts of the Commissioners of the District of Columbia, in respect to the collection and distribution of the contributions for the relief of the poor and suffering of the District of Columbia, of last winter, respectfully report that they have examined the statement and vouchers submitted by the Commissioners, through their agent, the Chief of Police, and find from the same that the sum of \$11,751.33 was received and that the sum \$11,751.83, or fifty cents in excess of receipts, was expended in a most efficient and satisfactory manner. They also find that in addition to the cash receipts a considerable quantity of supplies in the form of food, fuel, clothing, and bedding was contributed and distributed.

As this fund and the other contributions were the spontaneous expression of sympathy with, and desire to relieve, the sufferings of the poor unprepared for the trials of a severe winter, and as good was accomplished to an extent disproportionate to the facilities afforded those managing the contributions, upwards of 6,000 families having been relieved, we deem it a matter of some interest to refer to the admirable method adopted by the Commissioners in distributing relief over a large field, and to the relative demands made by the necessities in the future.

Major Brock, the Chief of Police, directed his men to examine into the wants of the poor in their respective precincts, and upon reporting the necessities of the individual, an order, signed by the lieutenant of the precinct, was given for whatever was most needed in the special case, which order was supplied by the merchant to whom it was

presented and returned by him to the lieutenant who issued it, he tested it, and it was then paid by the Chief of Police.

By this method every dollar was dedicated to its mission, and the strictest integrity insured in carrying out the trust imposed upon the Commissioners.

The relative necessities of the poor last winter are shown by the following tabular statement of the expenditure of the fund, and may furnish a future guide for the charitable who may make contributions of articles instead of money.

The amount of cash contributed was \$11,751.33, which was distributed thus:

Groceries	\$6,087 06
Fuel	5,266 46
Boots and shoes	142 60
Cash in small amounts	128 97
Cartage of coke	80 00
Dry goods and bedding	46 74
Overpaid	50
	<hr/>
	11,751 83

In conclusion, we take pleasure in congratulating the charitable upon the suffering they relieved by their generous and spontaneous response, and we beg leave to commend Maj. Wm. G. Brock, Chief of Police, for the admirable method he adopted, and which, with the aid of his officers and men, he so efficiently executed.

Very respectfully, your obedient servants,

REGINALD FENDALL,
F. B. MCGUIRE,
LEWIS J. DAVIS,
Committee.

EMERGENCY HOSPITAL.

This institution was opened July 16, 1881, and is connected with the Central Free Dispensary.

Even at this early day this hospital promises to be of the greatest benefit to the community and assistance to this department.

FISH LAW.

The act of Congress relative to the protection of the Potomac fisheries in the District of Columbia, and for the preservation of shad and herring in the Potomac River, approved April 6, 1880, made no provision for defraying the expenses which must occur in the enforcement of its provisions; there was no appropriation made for the same object during the fiscal year just ended; until some arrangement is made whereby this department may have the use of a steam launch, I will be practically unable to see that none of the sections of said law are violated.

I would respectfully recommend that the Commissioners urge on Congress the necessity of providing this department with the means of enforcing the law in this respect.

DARK ALLEYS.

During the year there were 73 lamps placed in the alleys that most required light, leaving about 60 to be provided for in this respect.

This is of the greatest assistance to police surveillance, by greatly reducing the opportunities for committing crime and preventing fugitives from justice finding hiding places therein, as well as enabling the patrolman to give the time heretofore required in the oversight of these alleys to the streets and avenues of our city.

I respectfully recommend that the alleys not yet furnished with lamps be supplied with them as soon as possible.

REFORMATORY FOR GIRLS.

There are in Washington, as in other large cities, a number of young girls whose moral tendencies are bad. There are others who, through

some cause, have made an erring step and are on the downward road. Many of these could be rescued from the life they are leading, and become respectable members of society, if there was only some institution in which they could be placed and where they would be surrounded by good influences; where they could be guarded from temptation, and their higher interests cared for. I but repeat what I have said in my previous reports when I recommend the establishment of such a reformatory institution in this city. It is necessary, it is due to the city, to the unfortunate girls, and to humanity. Its lack is working harm; its establishment could not but be productive of good. All those consigned to its protecting care might not be reformed, but I am sure that the proportion would be amply sufficient to justify any effort which might be made in this direction.

DETAILS.

In conclusion, gentlemen, permit me to state that in my opinion, and until the force is largely increased, this department should not be burdened with large and permanent details for other, and in some cases, duty not coming strictly under the head "legitimate police service."

I need not go into a statement as to where such details are, and why they were made at first, as doubtless the Commissioners have full knowledge on the subject, but from my experience of the needs of the service and the urgent necessity that every available man on the force should give his whole time and attention to police patrol or street duty, I earnestly recommend that every permanent detail be abolished and that the men thus relieved return to their precincts for active police service.

I heartily thank you for the uniform kindness extended to every member of this department during the year, and recommend to your favorable consideration the various suggestions of the sanitary officer.

Respectfully submitted.

WM. G. BROCK,
Major and Superintendent.

Hon. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

Estimates for fiscal year ending June 30, 1883.

PAY-ROLL.	
Major and superintendent	\$2, 610 00
Captain and inspector	1, 800 00
Property clerk	1, 800 00
1 clerk	1, 500 00
1 clerk	1, 200 00
3 surgeons, at \$450 each	1, 350 00
6 detectives, at \$1,320 each	7, 920 00
10 lieutenants, at \$1,200 each	12, 000 00
20 sergeants, at \$1,140 each	22, 800 00
7 acting sergeants, at \$1,080 each	7, 560 00
120 privates (class 2), at \$1,080 each	129, 600 00
73 privates (class 1), at \$900 each	65, 700 00
16 station-keepers, at \$516 each	8, 256 00
8 laborers, at \$420 each	3, 360 00
3 telephone operators, at \$780 each	2, 340 00
1 messenger	700 00
1 messenger	500 00
2 drivers, at \$300 each	600 00
1 ambulance driver	600 00
Major and superintendent (mounted service)	360 00
Captain and inspector (mounted service)	240 00
50 lieutenants, sergeants, and privates (mounted service), at \$240 each ..	12, 000 00
Total pay-roll	284, 796 00

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 105

Rent of station-houses and headquarters	5,960 00
Fuel	1,500 00
Repairs to station-houses	1,500 00
Miscellaneous expenses, including stationery, gas, telegraphy, ice, washing, meals for prisoners, photographs, printing and binding, rent of telephones, expenses of ambulance and team, expenses incurred in detection and prevention of crime, for furniture and repairs to same, for police equipments and repairs to same, ammunition, beds, and bedding, and contingencies	13,800 00
In all	307,556 00

Statement of money and estimated value of property taken into possession of the Metropolitan Police, and delivered to owners and property clerk, during year ending June 30, 1881.

Date.	Detective corps.	First precinct.	Second precinct.	Third precinct.	Fourth precinct.	Fifth precinct.	Sixth precinct.	Seventh precinct.	Eighth precinct.
July	\$560 50	\$539 47	\$455 75	\$182 22	\$681 00	\$597 68	\$207 49	\$680 84	\$810 11
August	717 93	716 67	1,308 61	743 25	708 12	850 06	163 40	638 99	1,277 26
September	400 83	656 50	246 37	4,864 63	317 53	801 98	399 82	1,449 98	454 93
October	731 65	999 94	1,017 82	600 45	107 83	8,424 97	915 75	553 63	381 86
November	739 00	1,184 98	611 77	407 59	784 20	1,526 79	1,674 49	1,097 33	1,853 18
December	780 51	297 54	719 51	158 66	742 69	1,400 53	654 75	1,471 31	921 99
January	2,780 45	426 85	494 09	896 61	531 83	1,799 76	643 00	1,395 64	634 38
February	1,557 00	336 50	174 26	615 12	1,123 14	1,485 13	878 51	691 72	412 94
March	1,735 49	1,049 87	1,046 72	679 95	2,085 81	3,141 88	560 31	1,278 36	593 67
April	1,087 00	238 62	345 75	437 55	807 41	3,475 53	99 15	1,956 25	175 03
May	1,001 68	423 44	761 34	561 86	1,331 39	1,581 89	238 57	1,051 80	331 15
June	1,142 79	209 62	514 65	439 82	396 62	2,387 38	383 16	1,239 97	263 60
Total	12,234 83	7,080 00	7,696 64	10,589 71	9,117 57	22,473 56	6,818 40	13,505 82	7,419 09

Total amount, \$96,935.62.

WM. J. DUNIVAN,
Property Clerk, Metropolitan Police District.

APPENDIX K 1.

TABLE OF ARRESTS, ETC.

No. 1.—Table showing the disposition of the force.

Precincts.	Major and super-intendent.	Captain and inspector.	Lieutenants.	Sergeants.	Acting sergeants.	Privates.	Detained.	Vacancies.	Total.
First	1	3	1	23	3	.....	31
Second	1	2	1	17	.....	.....	21
Third	3	.....	13	2	.....	23
Fourth	1	3	.....	17	3	.....	24
Fifth	1	2	2	21	4	.....	30
Sixth	1	2	1	19	2	.....	25
Seventh	1	2	1	27	7	.....	38
Eighth	1	3	1	26	3	.....	34
Night inspector	1	1	1	1
Police court	1	1
Detectives	1	6	7
Sanitary	1	1
Total	1	1	10	20	7	175	24	238

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No. 2.—Table showing time lost by sickness and other causes.

Precincts.	Sick.	With leave.	Without leave.	Days.
First.....	315	188	11	514
Second.....	469	226	3	698
Third.....	571	190	.....	761
Fourth.....	246	146	7	399
Fifth.....	863	131	2	996
Sixth.....	497	163	12	612
Seventh.....	486	263	9	758
Eighth.....	506	196	4	706
Detectives.....	12	9	.....	21
Sanitary.....	.....	.....	.....	.....
Total.....	3,965	1,452	48	5,465

No. 3.—Table showing number of arrests in each precinct.

Precincts.	Males.	Females.	Total.
First.....	1,360	484	1,844
Second.....	896	198	1,094
Third.....	1,048	184	1,232
Fourth.....	1,191	133	1,324
Fifth.....	8,028	570	3,598
Sixth.....	894	167	1,061
Seventh.....	2,041	287	2,308
Eighth.....	969	156	1,125
Sanitary.....	.....	.....	.....
Detectives.....	314	42	356
Total.....	11,741	2,201	13,942

No. 4.—Table showing the ages of the males arrested, classified.

Precincts.	From 10 to 20.	From 20 to 30.	From 30 to 40.	40 and over.	Total.
First.....	222	501	296	341	1,360
Second.....	288	254	147	207	896
Third.....	152	319	243	334	1,048
Fourth.....	241	355	248	347	1,191
Fifth.....	515	1,077	772	664	3,028
Sixth.....	272	309	152	161	894
Seventh.....	273	627	500	641	2,041
Eighth.....	228	269	201	271	969
Sanitary.....	.....	.....	.....	.....	.....
Detectives.....	92	139	56	35	314
Total.....	2,283	3,842	2,615	3,001	11,741

No. 5.—Table showing the ages of the females arrested, classified.

Precincts.	From 10 to 20.	From 20 to 30.	From 30 to 40.	40 and over.	Total.
First.....	53	251	114	66	484
Second.....	69	54	41	35	199
Third.....	26	67	43	48	184
Fourth.....	30	31	23	49	133
Fifth.....	104	270	138	58	570
Sixth.....	59	51	29	23	167
Seventh.....	42	93	93	39	267
Eighth.....	29	45	48	34	156
Tenth.....	.....	.....	.....	.....	.....
Detectives.....	23	11	3	4	41
Total.....	495	873	532	361	2,201

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 107

No. 6.—Recapitulation of offenses classified.

Offenses against the person.	Males.	Females.	Total.
Adultery	1	.....	1
Assault	274	83	857
Assault and battery	1,044	294	1,838
Assault and battery with intent to kill	64	19	83
Assaulting policemen	27	2	29
Attempt at rape	6	.....	6
Affray	147	18	165
Abduction	1	.....	1
Blackmailing	3	.....	3
Bribery	1	.....	1
Bigamy	2	1	3
Conspiracy	2	1	3
Contempt of court	92	27	119
Carrying concealed weapons	141	5	146
Disorderly conduct	706	208	914
Deerters	88	.....	88
Fighting in the streets	40	.....	40
Fast driving	25	.....	25
Fugitives from justice	53	8	61
Fugitives from parents	25	12	37
Fugitives from reform school	22	.....	22
Fugitives from insane asylum	10	.....	10
Habitual drunkenness	2	.....	2
Intoxication	3,632	815	3,947
Intoxication and disorderly	410	116	526
Idle and incorrigible	14	.....	14
Insanity	83	12	45
Indecent exposure	70	3	73
Interfering with policemen	6	.....	6
Infanticide	1	1	2
Keeping bawdy house .....	.....	13	13
Keeping disorderly house	6	12	18
Keeping gambling house	5	.....	5
Keeping policy shop	16	.....	16
Miscellaneous misdemeanors	54	5	59
Murder	9	.....	9
Mayhem	2	.....	2
Passing counterfeit money	1	1	2
Perjury	5	2	7
Profanity	390	144	534
Picking pockets	6	.....	6
Rape	13	.....	13
Rioting	2	.....	2
Resisting officer	11	1	12
Robbery	3	.....	3
Sodomy	2	.....	2
Threats of violence	243	138	381
Vagrancy	504	295	859
Witnesses for the United States	91	49	140
	8,315	1,785	10,100

No. 7.—Recapitulation of offenses classified.

Offenses against property.	Males.	Females.	Total.
Arson	2	.....	2
Burglary	30	1	31
Buying stolen goods	3	.....	3
Cruelty to animals	21	.....	21
Destroying private property	60	9	69
Destroying public property	20	.....	20
Embezzlement	19	.....	19
Forgery	11	.....	11
Fraud	3	.....	3
Gambling	8	.....	8
Grand larceny	88	22	108
Highway robbery	9	.....	9
Housebreaking	1	.....	1
Malicious mischief	68	6	74
Obtaining goods or money by false pretenses	21	49	70
Petit larceny	778	88	866
Passing counterfeit money	1	2	3
Picking pockets	1	.....	1
Robbery	7	.....	7
Receiving stolen goods	15	8	23
Suspicion	567	54	621
Trespass	82	5	87
Violation of United States Revenue law	1	.....	1
Violation of United States Pension law	1	1
Violation of District Ordinances	1,611	172	1,783
	3,426	416	3,842

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No. 8.—*Nativity of those arrested classified.*

Nativity.	Number.	Nativity.	Number.
United States, white.....	6,290	Algiers.....	2
United States, colored.....	5,678	Russia.....	4
Ireland.....	1,180	Australia.....	2
Germany.....	508	Austria.....	5
England.....	106	Norway.....	5
Scotland.....	39	Poland.....	1
France.....	33	Cuba.....	1
Italy.....	42	Wales.....	2
Denmark.....	7	Hungary.....	2
Canada.....	10	China.....	1
Switzerland.....	10		
Sweden.....	11	Total.....	13,942
Persia.....	3		

No. 9.—*Table showing trades and calling of persons arrested.*

Occupation.	Number.	Occupation.	Number.
Artists.....	9	Grocers.....	54
Apprentices.....	6	Gardeners.....	45
Auctioneers.....	18	Gamblers.....	7
Agents.....	124	Gilder.....	1
Architects.....	2	Horseshoers.....	10
Actors.....	10	Hackmen.....	50
Boat-builder.....	1	Hotel-keepers.....	13
Bootblacks.....	70	Hucksters.....	225
Boatmen.....	28	Housekeepers.....	648
Barbers.....	87	Hostlers.....	25
Barkeepers.....	135	Harness-makers.....	17
Blacksmiths.....	147	Janitors.....	3
Bricklayers.....	160	Jewelers.....	20
Brickmakers.....	8	Junk-shop keepers.....	17
Butchers.....	118	Laborers.....	4,149
Bakers.....	58	Lawyers.....	78
Bookbinders.....	14	Livery-stable keepers.....	7
Brewers.....	9	Locksmiths.....	2
Broom-makers.....	3	Laundresses.....	9
Boiler-makers.....	5	Liquor-dealer.....	1
Builders.....	2	Lithographers.....	2
Brokers.....	10	Merchants.....	203
Brass-finishers.....	3	Machinists.....	85
Butter-dealers.....	2	Musicians.....	24
Carpenters.....	311	Millers.....	7
Clerks.....	746	Messengers.....	33
Cigar-makers.....	43	Magistrates.....	2
Confectioners.....	6	Mariners.....	4
Contractors.....	33	Molders.....	18
Coach-makers.....	5	Masons.....	13
Cabinet-makers.....	25	Ministers.....	4
Constables.....	10	Marines.....	31
Coopers.....	13	Newsboys.....	112
Clock-makers.....	10	Pilot.....	1
Cooks.....	40	Oystermen.....	2
Coppersmith.....	1	Policy-writers.....	6
Cattle-brokers.....	27	Peddlers.....	61
Coachmen.....	5	Printers.....	227
Cutler.....	1	Physicians.....	44
Dentists.....	3	Plasterers.....	95
Dressmakers.....	4	Prostitutes.....	727
Dairymen.....	77	Painters.....	283
Drovers.....	10	Pavers.....	18
Dyers.....	2	Police-men.....	16
Druggists.....	14	Pattern-makers.....	2
Drivers.....	238	Plumbers.....	88
Drughtsmen.....	5	Photographers.....	10
Editor.....	1	Porters.....	31
Engineers.....	36	Paper-hangers.....	4
Engravers.....	16	Paper-makers.....	4
Florists.....	6	Produce-dealers.....	5
Feed-dealer.....	1	Restaurant-keepers.....	67
Fishermen.....	22	Ragpickers.....	31
Farmers.....	173	Riggers.....	4
Firemen.....	9	Reporters.....	46
Fish-dealer.....	1	Salesman.....	1
Gasfitters.....	2	Stenographers.....	6
Gunsmith.....	1	Soldiers.....	222

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 109

No. 9. — Table showing trades and calling of those arrested—Continued.

Occupation.	Number.	Occupation.	Number.
Servants.....	646	Thieves.....	447
Shoemakers.....	137	Tinkers.....	7
Silver-platers.....	3	Tobaccoist.....	1
Snow-cutters.....	95	Undertakers.....	2
School-teachers.....	7	Unknown.....	555
Sailors.....	218	Upholsterers.....	20
Students.....	23	Vagrants.....	38
Sailmakers.....	12	Wheelwrights.....	5
Samstresses.....	4	Watchmen.....	33
Store-keepers.....	78	Weaver.....	1
Schoolboys.....	450	Waiters.....	119
Schoolgirls.....	32	Woodturners.....	5
Scavengers.....	3	Whitewashers.....	3
Tailors.....	60	Watchmakers.....	9
Teamsters.....	12		
Tinners.....	69	Total.....	13,942
Telegraphist.....	1		

DISPOSITION OF CASES.

Number of cases in which fines were imposed.....	3,208
Amounting to.....	\$32,133 78
Amount paid in United States cases.....	5,695 23
Amount paid in District of Columbia cases.....	9,672 14
United States cases appealed.....	1,010 00
District of Columbia cases appealed.....	4,974 00
Dismissed.....	6,839
Surrendered to military authority.....	2
Surrendered to naval authority.....	30
Surrendered to Virginia authority.....	5
Surrendered to Maryland authority.....	13
Surrendered to reform school.....	19
Surrendered to United States marshal.....	26
Surrendered to insane asylum.....	31
Surrendered to workhouse.....	24
Surrendered to parents or guardians.....	52
Sent to jail.....	966
Sent to workhouse.....	1,613
Sent to House of Good Shepherd, Baltimore, Md.....	2
Sent to reform school.....	44
Sent to insane asylum.....	3
Bonds to keep the peace.....	237
Bonds for grand jury.....	117
Bonds personal.....	215
Appealed from police court.....	121
Not disposed of.....	114
Nol. proa. entered.....	210
Miscellaneous dispositions.....	40
Sentence suspended.....	11
Grand total.....	13,942

RECAPITULATION.

Total number of arrests.....	13,942
Males.....	11,741
Females.....	2,201
Married.....	5,101
Single.....	8,841
Could read and write.....	10,071
Could not read and write.....	3,871

Offenses against the person were committed by 8,315 males and 1,785 females.

Offenses against property were committed by 3,426 males and 416 females.

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INCIDENTALS.

Attempted suicide.....	8
Accidents reported.....	254
Assistance rendered.....	337
Abandoned infants found.....	23
Dead infants found.....	62
Dangerous holes in carriageways and sidewalks.....	540
Doors found open and secured.....	265
Dead animals reported.....	1, 829
Deaths where coroner was notified and no inquest held.....	36
Fires attended.....	157
Fire plugs out of repair.....	18
Filthy alleys reported.....	96
Horses and other animals found and returned to owners.....	223
Hydrants and water pipes broken.....	415
Inquests attended.....	59
Lamps out of repair.....	145
Loads of coal weighed.....	1, 504
Lost children restored to parents.....	174
Lodgers accommodated.....	3, 930
Nuisances reported.....	452
Owners of insecure buildings notified.....	27
Pumps out of repair.....	357
Permits examined.....	218
Sudden deaths reported.....	81
Sewers in bad condition.....	108
Suicides.....	8
Telegrams sent and received.....	39, 427
Trees and tree boxes damaged.....	1, 230
Water notices served by police.....	846

APPENDIX K 2.

INVENTORY OF DISTRICT PROPERTY.

MAJOR AND SUPERINTENDENT'S ROOM.

Cylinder desk.....	1	Wash-stand, bowl, and pitcher.....	1
Book case.....	1	Large desk.....	1
Revolving book rack.....	1	Small tables.....	2
Wardrobe.....	1	Desk chair.....	1
Calendar clock.....	1	Arm chairs.....	7
Hat rack.....	1	Sofa.....	1
Water cooler and stand.....	1	Full set of American Cyclopædias.....	

CAPTAIN AND INSPECTOR'S ROOM.

Desk.....	1	Tables.....	2
Book case.....	1	Desk chair.....	1
Book rack.....	1	Arm chairs.....	2
Hat rack.....	1	Office chairs.....	4

CLERKS' ROOM.

Cylinder desk.....	1	Office chairs.....	2
Tables.....	3	Arm chairs.....	2
Book cases.....	5	Hat rack.....	1
Wardrobe.....	1	Clock.....	1
Washstand.....	1	Step-ladder.....	1
Bowl and pitcher.....	1	Letter press and stand.....	1
Revolving chairs.....	4		

SANITARY ROOM.

Writing desks.....	2	Wardrobe.....	1
Chairs.....	6	Mirror.....	1
Record books.....	8	Spittoons.....	1
Waste basket.....	1	Pens, penholders, inkstands, sponge, and cup.....	
File holders.....	5		

DETECTIVES' ROOM.

Wardrobes	5	Water cooler.....	1
Hat rack	1	Waste basket.....	1
Spittoons.....	9	Mirror, comb, and brush.....	1
Writing desks.....	2	Drop light.....	1
Writing table.....	1	Lounge	1
Book case.....	1	Bedsteads	2
Safe.....	1	Mattresses.....	3
Chairs.....	17	Pillows.....	3
Carpets	3	Washstand, bowl, and pitcher.....	1
Clocks.....	1	Stoves.....	2
Handcuffs, pair.....	1	Books, stationery, &c.....	
Blackboard	1		

TELEPHONE ROOM.

Carpet	1	Telegraph instrument (old)	1
Clock	1	Table	1
Copying press	1	Sponge and cup.....	1
Desk.....	1	Waste basket.....	1
Inkstand.....	1	Book rest	1
Pen rack	1	Chairs.....	3

INVENTORY OF DISTRICT PROPERTY IN THE SEVERAL STATION-HOUSES.

FIRST PRECINCT STATION.

Batons, regulation.....	32	Oil, sperm, bottle	1
Blankets, pairs.....	29	Pens, boxes	1
Book case	1	Penholders	5
Blotters.....	25	Pen racks.....	2
Brushes.....	8	Pistol case.....	1
Brooms.....	6	Pistols, army	30
Bucket.....	1	Pistols, army-holsters	30
Bedsteads	13	Pistols, army, cartridge boxes.....	30
Bellows.....	1	Pistols, army belts.....	30
Books, record.....	21	Pistol, Colt's pocket-pistol, one to each man.....	31
Cartridges (pocket pistol).....	200	Pan, dust.....	2
Cartridges (Army size).....	560	Pencils, lead.....	6
Copy, laws United States.....	1	Pencils, slate.....	6
Copy, laws District of Columbia.....	1	Pillows.....	26
Copy, laws Webb's Digest.....	1	Pillow cases.....	40
Chamois skin.....	1	Rulers, rubber.....	2
Clock.....	1	Slates.....	2
Combs.....	3	Sheets	40
Chairs.....	18	Spreads.....	44
Coffee boiler.....	1	Stoves and pipe.....	5
Coal (tons).....	1	Spittoons.....	21
Coal hods.....	5	Sponge cup.....	1
Coal shovel.....	1	Table	1
Coal sieve.....	1	Towels.....	13
Drinks.....	2	Tin cups.....	8
Handcuffs, pairs.....	2	Tin basin.....	1
Hose, rubber.....	1	Telephone instrument	1
Inkstands.....	2	Wardrobes.....	12
Ink bottles.....	2	Water-cooler.....	1
Locks for cells.....	2	Writing-desk.....	1
Lanterns.....	2	Window curtains.....	24
Map of District of Columbia.....	1	Washstand.....	1
Mattresses.....	26	Wood, kindling, $\frac{1}{4}$ cord.....	
Mata, door.....	2	Envelopes, stationery, &c., for use of station.....	
Mucilage, bottle.....	1		
Mops, floor.....	4		
Mirrors.....	3		

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SECOND PRECINCT STATION.

Wardrobes	20	Clocks	2
Bedsteads	6	Water-cooler	1
Mattresses	11	Desk	1
Pillows	11	Book case	1
Sheets	55	Mirrors	2
Pillow cases	35	Pistol case	1
Towels	35	Hose, set	1
Blankets	12	Coffee boiler	1
Bedspreads	11	Stoves and stove pipe	4
Carpets	5	Coal hods	3
Matting, hall	1	Brushes, all sorts	12
Chairs	25	Coal sieve	1
Tables	3	Lanterns	3
Window curtains	10	Door mats	3
Map of District of Columbia	1	Feather dusters	2
Locks and keys for cells	4	Water buckets	2
File holders	4	Brooms	8
Spittoons	10	Insect bellows	1
Iron rail fence	1	Mops	1
City directory	1	Mop stick	1
Slates	2	Rogues' picture case	1
Baskets	1	United States Statutes at Large	1
Batons, dress	14	Webb's Digest	1
Handcuffs, pair	1	Tin cups	7
Combs	1	Whisk brooms	4
Dust pan	1	Lot of record books, stationery, half	
Gas drop light	1	ton of coal, half cord of wood, a	
Shovels	3	small quantity of toilet soap, black-	
		ing, camphor, candles, &c.	

THIRD PRECINCT STATION.

Army revolvers	20	Office chairs	2
Army revolver cartridge boxes	16	Mirrors	3
Army revolver holsters	20	Map of Georgetown	1
Army revolver belts	20	Lantern	1
Army revolver cartridges	320	Step ladder	1
Colt's revolvers (pocket)	22	Door mats	2
Colt's revolver cartridges	330	Window brush	1
Bedsteads	12	Counterpanes	52
Water-cooler	1	Coal hods	3
Musket-rack	1	Stove brushes	2
Stove	1	Regulation day batons	20
Wardrobes	3	Book cases	2
Blankets	48	Pocket lamp	1
Bedroom chairs	6	Office desk	1
Drop lights	2	Sheets	72
Pillows	17	Towels	17
Shoe brushes	10	Revolver rack	1
Water pitcher	1	Dust pans	1
Window curtains	11	Buckets	4
Small stove	1	Sprinkling can	1
Scoop shovel	1	Slates	2
Pine tables	2	Office clock	1
Sponge	1	Carpets	2
Mattresses	20	Feather duster	1
Hand hose	1	Mop handle	1
Waste basket	1	Tin cups	6
Brooms	2	Hatchet	1
Bellows, insect	1	Roller towels	25
Whisk brooms	5	Pillow cases	45
Handcuffs, pairs	2	Coal sieve	1
Spittoons	12	Lot books, stationery, &c.	
Arm chairs	13		
Dust brush	1		

FOURTH PRECINCT STATION.

Army revolvers.....	25	Small towels.....	6
Army revolver holsters.....	26	Common chairs.....	10
Army revolver cartridge boxes.....	25	Arm chairs.....	19
Army revolver belts.....	25	Spittoons.....	21
Horse blankets.....	2	Mirrors.....	3
Saddles.....	2	Combs.....	5
Bridles.....	2	Hair brushes.....	5
Wardrobes.....	3	Clothes brushes.....	3
Pistol case.....	1	Penholders.....	6
Tables.....	4	Dark lantern.....	1
Book cases.....	2	Lantern.....	1
Writing desk.....	1	Tin cups.....	6
Clocks.....	2	Colt's pocket revolvers.....	24
Office chairs.....	2	Colt's metallic cartridge boxes.....	6
Carpets, yards.....	105	Toilet soap, dozen.....	24
Mats.....	2	Blackening brushes.....	3
Waste baskets.....	2	Matches, gross.....	1
Double bedsteads.....	10	Boxes blacking, dozen.....	1
Single bedsteads.....	4	Whisk brooms.....	6
Mattresses.....	22	Foolscap, ream.....	1
Pillows.....	24	Letter paper, ream.....	1
Spreads.....	42	Shoe brushes.....	4
Double blankets.....	42	Bottles kerosene oil.....	2
Single blankets.....	3	Coffee boiler.....	1
Sheets.....	84	Coal shovels.....	4
Pillow cases.....	36	Dress batons.....	20
Roller towels.....	18	Stoves.....	2
Furnace.....	1	Hoe.....	1
Drop light.....	1	Wall brush.....	1
Insect exterminator, bottles.....	11	Whitewash brush.....	1
Water-cooler.....	1	Hose, feet.....	50
Step ladder.....	1	Curtains.....	8
Buckets.....	4	Lot of books used as records.....	
Rake.....	1	Gun rack.....	1
Dust brush.....	1		

FIFTH PRECINCT STATION.

Badge brushes.....	2	Hair brushes.....	5
Batons in daily use.....	28	Handcuffs, pairs.....	3
Batons, rosewood.....	30	Inkstands.....	2
Bedsteads, double.....	13	Lantern.....	1
Bedstead, single.....	1	Mirrors.....	4
Bed spreads, white.....	25	Map of District of Columbia.....	1
Bed spreads, colored.....	26	Mattresses.....	28
Blackening brushes.....	6	Office clock.....	1
Blankets.....	53	Pen racks.....	2
Book cases.....	2	Combs.....	6
Books, record.....	58	Pillows.....	48
Brooms.....	8	Pillow slips.....	74
Buckets.....	4	Pistol rack case.....	1
Carpets in strips, yards.....	40	Powder bellows, insect.....	1
Carpets on rooms.....	5	Revolving chairs.....	2
Cell locks.....	6	Revolvers, Colt's, improved.....	28
Chairs.....	43	Rubber hose, feet.....	40
Coal hods.....	2	Rubber rulers.....	2
Coal shovel.....	1	Sheets.....	88
Coal sieve.....	1	Shovels.....	8
Clothes brushes.....	4	Sign for station.....	1
Colt's army revolvers, equipments, &c.....	37	Scissors.....	1
Cartridges for same.....	825	Slate.....	1
Copy Revised Statutes.....	1	Spittoons.....	21
Copy Webb's Digest.....	1	Sponges.....	
Dark lantern.....	1	Sponge cup.....	
Door mats.....	3	Stoves.....	
Dust brush.....	1	Tables.....	
Dust pan.....	1	Telephone instrument.....	
Feather duster.....	1	Tin basins.....	

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Tin cups.
Tin kettle.
Towels, roller.
Towels, hand.
Wardrobes, double.
Wardrobes, single.
Waste baskets.

Water cooler.
Whisk brooms.
Window curtains.
Writing desks.
Small lot of stationery, soap, blacking,
matches, &c.

SIXTH PRECINCT STATION.*

Set of office books and records	1	Coal hods	5
Double bedsteads, iron	11	Coal shovel	1
Single bedstead, iron	1	Stove shovels	5
Mattresses	24	Water buckets	2
Pillows	24	Slop buckets	2
Pillow slips	40	Sprinkler	1
Sheets	100	Grass scythe	1
Bedspreads	24	Step ladder	1
Chairs	40	Brooms	3
Revolving chair	1	Door mats	3
Carpets	4	Wheelbarrow	1
Stoves	4	Coal sieve	1
Clock	1	Handcuffs, pairs	2
Mirrors	3	Book case	1
Double wardrobes	2	Brushes, all sorts	12
Single wardrobes	3	Combs	2
Writing desks	3	Bull's-eye lantern	1
Round tables	2	Colt's army revolvers	24
Telephone instrument	1	Belts, holsters, and cartridge boxes	24
Pistol case	1	Rounds of ammunition for same	300
Double blankets	24	Map of District of Columbia	1
Rollers	15	Whisk brooms	3
Towels	8	Slates	4
Window shades	9	Hose and pipe	1
Water cooler	1	Lime, barrel	1
Spittoons	16	Stationery, &c.	1

SEVENTH PRECINCT STATION.

Double bedsteads	15	Whisk brooms	2
Single bedsteads	3	Floor brooms	6
Hair mattresses	32	Combs	1
Shuck mattresses	3	Tin wash basin	1
Sheets	85	Floor mats	2
Pillow cases	70	Lanterns	1
Double blankets	66	Oilcloth, yards	5
Spreads	54	Carpet, yards	128
Hair pillows	33	Manuals	38
Roller towels	28	Whistles	38
Hand towels	10	Badges	37
Wardrobes	11	Belts	37
Arms rack	1	File holders	5
Writing desks	4	Colt's revolvers	37
Office chairs	2	Water cooler	1
Cane-seat chairs	10	Coal, tons	2
Armchairs	9	Wood, cord	1
Bedroom chairs	10	Shovels	3
Telephone and fixtures	1	Coal hods	4
Stoves and fixtures	4	Pen holders	4
Round table	1	Lead pencils	12
Window curtains	10	Pens (boxes)	2
Iron spittoons	17	Erasers	2
Earthen spittoons	2	Pen racks	3
Mirrors	4	Inkstands	3
Book case	1	Sponge cups	2
Rubber hose	1	Sponges	2
Drop lights and fixtures	2	Foolscap paper, ream	1
Clock	1	Letter paper, ream	1
Paper weights	2	Note paper, ream	1

Envelopes	90	Regulation batons	
Ink, bottle	1	Cartridges	200
City Directory	1	Army revolvers	28
U. S. Statutes at Large	1	Cartridge boxes	25
Shears, pairs	2	Cap boxes	3
Blacking (boxes)	20	Belts	28
Toilet soap, cakes	25	Holsters	28
Staves	3	Cartridges (Army size)	725
Rubber rulers	2	Saddles	7
Waste baskets	2	Bridles	7
Tin-cups	2	Halters	6
Fire-alarm keys	37	Halter straps	6
Day batons	37	Blankets	7
Night batons	37	Lot of record books, &c.	

EIGHTH PRECINCT STATION.

Bedstead, iron	34	Handcuffs, pairs	4
Bedstead, wood	1	Dress batons	30
Sheets	70	Mirrors	3
Counterpanes	28	Chairs	42
Pillows	40	Chairs, revolving	3
Pillow cases	45	Water coolers	2
Mattresses	29	Buckets	4
Roller-towels	14	Spittoons	34
Hand towels	24	Dust brushes and pans	2
Carpets	3	Drop light	1
Door-mats	3	Ax	1
Shcloths	3	Brooms	5
Double wardrobes	2	Brooms, whisk	4
Single wardrobe	1	Window shades	12
Clocks	2	Telephone instruments	2
Pistol case	1	Coal scuttles	2
Stoves, drums, and pipe	3	Slates (double)	3
Pokers	2	Army revolvers	33
Rulers	3	Cartridge boxes	33
Office boiler	1	Belts and plates complete	33
Shoe brushes	5	Cartridges (rounds)	300
Pitcher and bowl	1	Shovels	2
Writing desks	4	Feather duster	1
Tables	3	Washstand	1
Book case	1	Furnace	1
Lantern	1	Tin coffee cups	6
Waketands	4	Stove brush	1
Blankets, pairs	50	Hatchets, lamps, pens, pencils, ink, paper, books, &c., for use in the sta- tion.	
Pen racks	3		
Tin cups	4		

APPENDIX K 3.

REPORT OF SANITARY OFFICER.

DEPARTMENT METROPOLITAN POLICE,
SANITARY OFFICE,
Washington, D. C., September 15, 1881.

SIR: I have the honor to submit my report of the work of this office during the fiscal year ending June 30, 1881.

This office is charged with attending to the destitute sick and poor of the District of Columbia who are compelled to go to hospital for treatment, as well as the non-resident sick and insane persons found in our midst in a suffering condition. Each case has to be carefully inquired into, and when found to be fit subject for treatment, the patient is promptly removed to the hospital. He or she is entitled to admission under the

law. In connection with the removal of these sick and insane cases to the several hospitals and asylums, I wish to call attention to the fact that the number of such cases has increased during the past year nearly 33 per cent. over any previous year; that the work performed by the ambulance driver has been done promptly, cheerfully, and with great fidelity. He not only understands, and is careful in the treatment of his horses, but is also kind and humane with the poor unfortunates he is called upon to remove. I may say that there is scarcely a day that the driver has a chance to partake of his regular meals, owing to the number of cases daily reported to be urgent, and consequently demanding immediate attention. It will thus be seen that not only the driver, but also the horses are put to their best efforts in trying to perform all the work and meet the demands of the number of applicants for removal to hospital. There was purchased for the use of this office a temporary light wagon during the past year, but no horse. I would suggest that an additional horse be purchased, and thus considerably relieve the ambulance team proper.

I again call attention to the fact that a number of non-resident insane paupers are found by the officers of this department wandering about the streets, and year after year these numbers increase. Under the law the District of Columbia is compelled to defray the expenses of their support in the Government Hospital for the Insane. Those whose legal place of residence can be ascertained are removed to their friends, but owing to the fact that many of them are not possessed of mind enough to give any account of their friends or legal place of residence, the District is compelled to pay for their support in hospital. The entire cost of their support while in hospital and transporting them to their homes has to be borne by the District of Columbia. I therefore suggest that Congress be requested to make a special appropriation to defray both the cost of supporting this class of persons while in hospital here as well as transporting them to their homes, as they have no claim whatever upon the District, inasmuch as they belong and are resident of the different States.

This office is also charged with furnishing transportation to persons who come to this city in hopes of getting employment, or who have some claim against the government. For instance, soldiers and widows of soldiers applying for pensions, and who think by coming to Washington they will accomplish that which for years they have failed in. They manage in some way to get means enough to bring them here, thinking they will succeed in obtaining what they imagine is justly due them, and in case they should not, that the government which they claim to have served so faithfully would at least give them enough to enable them to return to their homes. Subsequently they find out that they not only fail in obtaining the object of their mission, but that the general government has made no provision whatever with which they could be sent to their homes. The result is, they apply "like all others," to the police department for assistance, and as they are not "tramps" and cannot properly be classed as such, they must be treated with the consideration due to humanity. Therefore, it has been the practice of this office to extend to these people, or at least to the most distressed ones among the number, relief by way of transportation to or towards their homes. Owing to the small amount appropriated, relief cannot be extended to one applicant out of ten. The cost of such transportation is borne by the District of Columbia, though the beneficiaries are residents of the different States, and with few exceptions have some claim on the gen-

eral government, inasmuch as the greater number of them have been soldiers, or the widows or orphans of soldiers who served in the late war. In my opinion there is no money appropriated by Congress which does more good than this, but owing to the daily increase of the number of worthy applicants, and the inadequacy of the amount appropriated, I respectfully suggest that the amount be increased to \$5,000.

As in previous reports, I again request that the attention of Congress be called to the fact that section 248, page 947, Revised Statutes of the United States, provides that affidavits as to the insanity and indigency of the resident insane of this District must be made before a judge of the criminal or circuit court, or before a justice of the peace of the District of Columbia. Consequently there is no officer connected with the District government empowered to take such depositions, except the major and superintendent of police and the Commissioners of the District; the latter overburdened with other duties and not having time to attend to such matters, and, in the absence of the former, the acting major and superintendent has not the power to administer such affidavits. I therefore suggest that in order to facilitate the duties of the office, the section referred to be amended by inserting the words "or notary public" after those of justice of the peace.

I again wish to call attention to the urgent necessity for the erection in this city of an asylum where confirmed inebriates could be treated. There is no hospital or institution within the District where this class of persons can be sent and confined against their will. It often occurs that after all efforts on the part of the friends of these people to care for and reform them have failed, they are turned over to this department to be disposed of in some manner. Cases of this kind have been frequently sent from this office to the Providence Hospital, some to the Freedman's Hospital, and some to the Washington Asylum Hospital, where they have been kindly received and treated; but upon recovering from their drunken condition they have demanded their liberty, which could not be denied them, and have been found by the officers of the department the next day in as bad and deplorable condition as they were when sent to the hospital a few days before. Some of these unfortunate creatures whom I have known are respectably connected, whose friends have used all the means in their power to restore them to manhood, who had to be arrested the next day after their release from the workhouse, and sent down for another term of ninety days, and thus they spend their whole life, or nearly so, prisoners in that institution.

Humanity demands that there should be erected some such institution wherein these poor unfortunate people could be cared for, as the greater number of suicides, if not all which occur in our midst, are among those suffering from *mania a potu*, or the immediate effects of alcohol, and whose lives would be saved if the persons so afflicted could be confined in an institution of this kind until reason could be restored, and not only that, but many of them in a short time would be returned to their position in society and become not only respectable and honorable but useful citizens.

The following will show the number of sick and destitute persons sent to the several hospitals and asylums within the District of Columbia, and the nativity of the same; also the number of the non-resident paupers furnished with transportation towards their homes:

<i>Number of sick and destitute persons sent to the several hospitals and asylums during the year ending June 30, 1881.</i>	
Washington Asylum.....	470
Freedman's Hospital	422

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Providence Hospital.....	249
Government Hospital for Insane	131
Children's Hospital.....	11
Columbia Hospital.....	7
Little Sisters of the Poor	1
Saint Ann's Infant Asylum	1
Total	1,292
Increase over last year of	418

Of the total number sent to the Providence Hospital, about one-third were residents of this district, who were admitted through the kindness of the management of that institution, and cared and treated free of charge.

The nativity of persons sent to the several hospitals and asylums:

United States	1,037
Ireland	147
Germany.....	78
England.....	15
Scotland.....	4
Switzerland.....	4
Canada.....	1
Wales.....	1
Turkey.....	1
Poland.....	1
Russia.....	1
Portugal.....	1
India.....	1
Total.....	1,292

The number of indigent persons furnished with transportation toward their homes at the expense of the District of Columbia, was 349.

The number of cases removed in police ambulance from the scene of accident, and from the several dispensaries, to their respective homes, in addition to those removed to the several hospitals, averaged from two to five per week.

Actuated with a sense of justice toward the driver and hostler of the ambulance, and in view of the fact that they have to work day and night, I respectfully recommend that the compensation of each be increased. The driver, who now receives \$50 per month, be increased to \$75, and the hostler, who only receives \$25 per month, "not even one dollar per day," be increased to at least \$45 per month.

Respectfully submitted.

JOHN CONNELL,
Sanitary Officer Department Police.

WM. G. BROCK,
Major and Superintendent.

APPENDIX K 4.

REPORT OF BOARD OF SURGEONS.

WASHINGTON, D. C., *September 12, 1881.*

DEAR SIR: I have been requested by the surgeons of the force to prepare and transmit to you their annual report for the year ending

June 30, 1881. A severe illness, of more than a month's duration, has prevented an earlier compliance with their request and your wishes.

The whole number of the force is.....	238
Number who have been sick or disabled.....	185
Per cent. of force who lost time.....	.77
Total days' time made by the force.....	86,870
Total days' time lost through disability.....	4,192
Per cent. of time lost.....	.048
Average number of days lost by each man sick.....	23

Two members, being hopelessly insane, and inmates of asylums, lost one year each, leaving 236 members who did more or less duty during the year, or, 183 properly on the sick-reports, who either returned to duty or died. Dropping the two incurables, we have:

Total days' time made by 236 members.....	76,140
Total days' time lost by 183 members.....	3,462
Per cent. of time lost by 183 members.....	.045
Average days' time lost per man sick.....	18 $\frac{1}{3}$

The greatest number of days was lost in the month of March, being 458 days, and the number on sick-reports was 53, being nearly nine days to each one on the reports for the month. The least time was lost in the month of August, being 186 days by 24 men, or an average of 7 $\frac{1}{2}$ days per man. Two deaths have occurred during the year, viz:

Townsend R. Hobbs, of consumption, who lost 184 days.

Thomas Hellmuth, congestion of liver, who lost 26 days.

TIME LOST.

The large number of the force who lost time and the great amount of time lost, cannot but excite query as to either the cause thereof or the necessity therefor. Several reasons are to be assigned for the number who lost time, one of which is fatigue; the length of the beats and the fatigue of patrolling them, frequently causing the men to plead sickness, that they may obtain needed rest.

Again, a man frequently goes off duty sick, and the surgeons learn that for days he has frequented some drug-store and obtained some palliative, or has been taking some domestic remedy, or some charitable friends have suggested the very panacea for his ailment, each and all of which have failed to work the charm of a cure or have the desired effect of keeping the man on duty. When asked why he did not apply to the surgeons immediately on feeling unwell, the reply is, "O, I didn't wish to go off duty." He evidently forgets that it is the surgeon's duty to decide whether he is "fit or unfit for duty" and that the members of the force are expected and required to go to the surgeons "on the first manifestations of sickness," not that they may go off duty but that the tendency to disease may be checked, and they be prevented from losing time. A strict compliance with paragraph 164, page 38, of the Manual, would greatly lessen the number of days lost by sickness. If the men were more careful in their habits of life, and took rest on the days when they are off duty, instead of taxing their powers of endurance still further in the ways they are said to do, there would be fewer of them on the sick-reports. The manner of working the force at present, on the six-hour system, necessarily causes a great irregularity in the men's meals, for on no two consecutive days are the same meals partaken of at the same hour. Thus, if A dines to-day at twelve o'clock, that he may go on duty at one, to-morrow he will dine at two o'clock or later, because he went on duty at 8 a. m. and came off at one; so with other

meals; and thus the digestive organs are put out of order. While the surgeons have no suggestions, with the present limited number on the force, to make whereby this evil might be remedied, yet we mention it as one of the factors causing time to be lost.

There is another reason why more days' time is lost than perhaps might be. When a man becomes convalescent, and able to do some kind of duty, he is necessarily kept from reporting as "fit for duty" because he must take his regular tour, night and day, without regard to the state of the weather. Sometimes a man's first tour of duty would come at midnight; and it is deemed unwise to send a patient to the street at midnight from a sick-bed, and often at least one day is thus added to the time lost that the man may be guarded from a relapse. If some detailed duty for a short time could be given the convalescent (which is not practicable, I grant), much less time would appear on the reports as lost by sickness.

One other cause of "time lost" remains to be mentioned, and that is the time spent at the police court. The men who do duty during the later part of the night go off duty at 6 o'clock a. m., and are supposed to take rest until 6 o'clock p. m.; but should they have been so unfortunate as to have made any arrests during their tour of duty, they must appear at the court, and spend a large part of the day there instead of at their homes, in bed, resting; so that when the hour of 6 p. m. arrives, the men are tired and too often unfit to again resume duty and do it efficiently. The actual need of the force is an increase of members sufficiently large to cover the city more perfectly, and also afford longer hours of rest to the men; and then a more rigid enforcement of the regulations, as regards the manner of doing duty, can be required of the sergeants, whose sense of humanity now prevents them from exacting as strict a compliance with the rules as they then would.

STATION-HOUSES.

The station-houses are where the privates spend the most of their time when not on street duty. They live at the station-houses, taking their meals at the residences of their wives or at their boarding-houses. A station-house is not a place where the members of the force report at stated times that they may then go on street duty, but where they sleep and spend their time awaiting their tour of street duty, or any emergency, going to their meals at irregular periods, with an occasional night when they can remain away from the station for a few hours. From the foregoing it will appear that the members of the force reside at the station-houses and their families live somewhere else, and that they are only visitors at what are called "their homes." To plan a suitable station-house, the general ideas contained in the above should be kept in mind, that some comfort, as well as conveniences, should be accorded the men. Neither of the station-houses owned by the District is just the kind of building we should suggest as suitable to be used as a model for any that may be erected in the future, but as having serious defects to be avoided, especially in the want of proper ventilation in the dormitories. Only three buildings used as station-houses are the property of the District, namely, the third, fourth, and eighth precincts, respectively. The five rented buildings used as station-houses are so entirely unsuited to the purposes used, that it is impossible to find language suitable to express their monstrous inadaptability and the great wrong done to those members of the force who are so unfortunate as to be obliged to resort to them as their stations. In the

continued use of the buildings, if more suitable ones could be obtained, would be shown a disregard of the right of the men to proper and suitable shelter, comfort, and rest, that they may efficiently and satisfactorily discharge their duties. At an early a day as practicable, suitable station-houses should be erected in the first, second, fifth, sixth, and seventh precincts, and a substation in Uniontown.

SICK AND WOUNDED.

Frequently persons are taken sick in the cells of the respective station-houses, or are found so on the streets, or persons are injured or wounded, accidentally or otherwise, and are carried to the stations, and the police surgeons are sent for to render surgical or medical services. If the police surgeons are expected to render service to persons under these circumstances some provisions should be made whereby the remedies and appliances suitable to each case could be obtained without personal cost to them or the members of the force. In many cases either the surgeon, the lieutenant, the sergeant, or some member of the force have to pay out of their individual pockets the cost of the means needed and used. If the physicians to the poor were called to attend to such cases they could without personal cost make necessary prescriptions and obtain the needed means of relief.

INSANE CASES.

During the year perhaps 100 persons have been sent to the insane asylum by the surgeons of the force, beside a large number who have been sent to their respective homes in the States and another class, who were declared not to be insane or not fit inmates of the asylum for insane.

The classes of persons submitted to our examination as insane are:

First. Persons who come here from the States, and some from very remote places, who claim to be "President of the United States," or have some fancied wrong for the President to right, some claim to be adjusted, some patent to be granted, or some wild chimera to be promulgated.

Second. Persons who are non-residents who have wandered from their homes and who either seek the seat of the general government because of an indefinite idea they have that here all their wrongs are to be righted, or they are forwarded to this place from adjacent cities that the government shall take care of and provide for them.

Third. Persons who reside here, and whose friends find it no longer possible to restrain them in their vagaries or control them in their violence.

Fourth. Persons, who though not insane are no longer responsible for their acts, but are imbeciles, from age or some other infirmity, and whose friends are tired of the expense and trouble of providing for their necessities.

Fifth. Persons who are not insane in any definition of the term, unless dipsomania is insanity, but are persons who at the time of the examination are inebriated, or have become so perfectly enslaved by that pernicious habit as to have lost all self control.

Those who constitute the first, second, and third classes are the persons whose cases demand our careful examination lest we should unhappily deprive a citizen of liberty without being able to demonstrate to a jury that we were justified in so doing, should a suit for false imprisonment ever be brought against us, in danger of which we continually

stand. We are obliged to be equally cautious lest we let remain unrestrained one whose liberty would be dangerous to life or property. Many of these persons are strangers to us, with whose histories or peculiarities we are unacquainted, and whose sense of caution prompts them to reticence and to attempt to conceal their peculiar weakness, of the existence of which they, sometimes, do not appear to be entirely unaware. It is evident that a nice discriminating judgment is here required, as well as good tact and caution, that no error be committed on either side.

As regards those constituting the fourth class, we often find ourselves greatly straitened, for they need care and protection and yet there is no asylum or place of refuge for them. We commend such cases to your consideration that some suitable provision under the head of charity be made for them.

The fifth class should properly find refuge in an inebriate asylum, which institution, as yet, has failed to recommend itself as a necessity, sufficiently strong to the authorities to meet with the favor the case demands. Such an institution, while it should be considered a blot on our civilization, should be an important institution in our humanities and receive a large share of our charities.

I believe that my task will be done and the duty assigned me completed, when I shall have referred, briefly, to the fact that the doors of Providence Hospital have been willingly and cheerfully opened to receive any case of emergency, we, or the police, have sent there, but because of the unostentatious manner in which the offer was made and the cordiality with which our unfortunates have been received, we have been chary of using our privileges, which are, that we may send any we choose to that institution.

I remain, Major, very respectfully, &c.,

S. A. H. MCKIM, M. D.,
*Surgeon Metropolitan Police, District Columbia,
 for Board of Surgeons.*

W. G. BROCK, Esq.,
Major and Superintendent Metropolitan Police, D. C.

APPENDIX K 5.

ESTIMATES.

Stationery, printing and binding.....	\$1,500 00
Gas.....	1,200 00
Telegraphy.....	120 00
Ice.....	150 00
Washing.....	600 00
Meals for prisoners.....	600 00
Photographs.....	150 00
Rent of telephones.....	400 00
Expenses of ambulance and team, and purchase of horses for same.....	1,500 00
Detection and prevention of crime.....	600 00
Furniture and repairs to same.....	500 00
Police equipments and repairs to same.....	500 00
Ammunition.....	100 00
Beds, bedding, towels, &c.....	200 00
Contingencies.....	5,680 00
Total miscellaneous.....	13,800 00

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Estimates for Police Department, year ending June 30, 1883.

Major and superintendent	\$2, 610 00
Captain and inspector	1, 800 00
Property clerk	1, 800 00
Clerk	1, 500 00
1 clerk	1, 200 00
3 surgeons, at \$450 each	1, 350 00
6 detectives, at \$1,320 each	7, 920 00
10 lieutenants, at \$1,200 each	12, 000 00
20 sergeants, at \$1, 140 each	22, 800 00
7 acting sergeants, at \$1, 080 each	7, 560 00
120 privates, class 2, at \$1, 080 each	129, 600 00
73 privates, class 1, at \$900 each	65, 700 00
16 station-keepers, at \$516 each	8, 256 00
5 laborers, at \$420 each	3, 360 00
1 messenger	700 00
1 messenger	500 00
2 drivers, at \$300 each	600 00
1 ambulance driver	600 00
Major and superintendent (mounted)	360 00
Captain and inspector (mounted)	240 00
50 lieutenants, sergeants, and privates, mounted service, at \$240 each....	12, 000 00
Total pay roll	282, 456 00
Rent of station-houses and headquarters	5, 960 00
Fuel	1, 500 00
Repairs to station-houses	1, 500 00
Purchase of steam-launch and expenses of running the same	5, 000 00
Miscellaneous expenses, including stationery, gas, telegraphy, ice, washing, meals for prisoners, photographs, printing and binding, expenses of police ambulance and team, expenses incurred in detection and prevention of crime, for furniture and repairs to same, for police equipments and repairs to same, ammunition, beds and bed clothing, one-horse ambulance, horse and harness, insignia of office, and forage.....	15, 000 00
In all	311, 416 00

L.—REPORT AND ESTIMATES OF THE TRUSTEES OF PUBLIC SCHOOLS.

OFFICE OF BOARD OF TRUSTEES OF PUBLIC SCHOOLS,
Franklin Building, Washington, September 29, 1881.

GENTLEMEN: The board of trustees, in response to your communication of August 15, requesting "an estimate of the amount required for the support of your department for the fiscal year ending June 30, 1883; also a detailed statement of the transactions of your department for the fiscal year ending June 30, 1881, with any recommendations you may deem it advisable to make, with the object of increasing the efficiency of that branch of the District government," has the honor to submit the following report and recommendations, with an estimate of the amount that will be required for the support of the public schools in the District of Columbia for the fiscal year ending June 30, 1883:

The number of youth of school age (6 to 17 inclusive) in the District of Columbia, according to the census of 1880, was: White, 29,612; colored, 13,946; total, 43,558.

The whole number of pupils enrolled in the public schools for the school year ending June 30, 1881, was: White, 17,716; colored, 9,583; total, 27,299; increase over the enrolment of last year, 860.

The average number of pupils enrolled in the public schools for the

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school year ending June 30, 1881, was: White, 14,453; colored, 7,608; total, 22,060; increase over last year, 461.

The number of teachers employed for the school year ending June 30, 1881, was: In the white schools, 302; in the colored schools, 157; total, 459.

The total payments for the support of the public schools for the school year ending June 30, 1881, were \$527,311.63.

The number of school-rooms owned is: For white schools, 180; for colored schools, 109: total, 289.

The number of school-rooms rented is: For white schools, 84; for colored schools, 23: total, 107.

ESTIMATE OF EXPENSES FOR THE SUPPORT OF THE PUBLIC SCHOOLS FOR THE FISCAL YEAR ENDING JUNE 30, 1883.

Salaries of teachers and superintendents	\$343,000 00
Wages of janitors and sweeps	25,000 00
Rent	22,000 00
Fuel	15,000 00
Repairs (including new roof for Jefferson building)	16,000 00
General supplies	15,000 00
Insurance	600 00
Printing	3,750 00
Secretary and clerks	2,050 00
Miscellaneous expenses	4,000 00
Fire-proof stairs for Summer building	5,000 00
Furniture and apparatus for high school	3,500 00
Furniture for new schools	5,000 00
Purchase of ground at Twenty-second and I streets	(?)
Excavating and underpinning Wallach school (east half)	4,500 00
Enclosing and improving grounds at Force school (coping, fences, sodding, &c.)	2,410 00
Enclosing and improving grounds at Henry and high schools (coping, fences, sodding, &c.)	7,119 40
Enclosing and improving grounds at Tenth and U streets (coping, fences, sodding, &c.)	4,610 95
Enclosing and improving grounds at First and Massachusetts avenue (coping, fences, sodding, &c.)	2,825 00
Steam-heating building at First and Massachusetts avenue	5,500 00
Enclosing and improving grounds at Tenth and H streets (coping, fences, sodding, &c.)	1,297 50
Steam-heating building at Tenth and H streets	5,500 00
Purchasing and improving grounds at Anacostia school	888 50
Enclosing and improving grounds at Bladensburg road school	550 00
For purchase of sites and erection of new buildings	100,000 00
To be distributed as follows:	
For the first division	\$30,000 00
For the fourth division	24,000 00
For the fifth division	5,000 00
For the sixth division	6,000 00
For the seventh division	35,000 00

*595,101 35

Very respectfully,

W. W. CURTIS,
Chairman Fiscal Committee.

C. M. MATTHEWS,
President Board of Trustees Public Schools.

Attest:

C. B. RHEEM,
Secretary.

The Hon. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

* Not including the item for the purchase of ground on Twenty-second and I streets

M.—REPORT OF THE COMMISSIONER AND INTENDANT OF THE WASHINGTON ASYLUM.

WASHINGTON ASYLUM,
Washington, D. C., October 1, 1881.

GENTLEMEN: While there has been some improvement, both sanitary and economical, in the general condition of the asylum, I am unable to make a report as favorable as that of last year. This is owing to the fact that the appropriation was largely reduced while there was a decided increase in the number of inmates and the cost of material. As a result of this state of affairs it was necessary to withdraw the prison gang from street work early in the season, there being no money with which to purchase the tools and extra clothing which would have been needed.

For the same reason it has been impossible to make many much needed repairs and improvements. The appropriation for this year is but little larger. The cost of material has still further increased, again making it impossible to utilize prison-labor on outside work. Moreover, the imperative necessity for certain changes long neglected, in order to make the pauper class reasonably comfortable regardless of the amount of money at command, renders the situation even more embarrassing than was that of last year. The condition of the "shanties" which were occupied by the colored male paupers has been for a long time a disgrace to civilization, and they have now become absolutely untenable. The necessity for additional money to furnish comfortable quarters was repeatedly urged upon the attention of Congress, but without avail. I have, however, been obliged, as a matter of common decency, to fit up, at a considerable expense, one of the old army magazine buildings, in which to quarter these people.

In times gone by but little attention was paid to the condition of our unfortunate classes; but public sentiment of to-day demands that they shall be reasonably and comfortably cared for. When I first assumed control of the asylum everything seemed going rapidly into a state of decay. While much has been done to improve the situation, more still remains to be done, and it is unnecessary to say that nothing can be accomplished without means. So far as cleanliness both of buildings and people is concerned, I am in a position to challenge comparison with any similar institution in the United States. Yet, for want of funds, fences have decayed beyond the possibility of repair; blinds have fallen from their hinges, and roofs are in a leaky condition, while the general sanitary state of the various buildings is not what it should be. During a large part of the year the hospital is densely crowded, and new wards have become an absolute necessity. Owing to these facts and to the meagerness of the appropriations for two years past I have made a decided increase in my estimates for the coming fiscal year. In the estimate for salaries it will be seen that nine overseers are provided for, with compensation at six hundred dollars per annum. In last year's appropriation bill five overseers were provided for, at six hundred dollars per annum, and four watchmen at two hundred and forty dollars per annum; but these four watchmen do and have always done exactly the same duty as that performed by the overseers. The amount paid to overseers is certainly very small if we are to expect intelligent and faithful service, and the injustice of making the distinction which has heretofore existed will be seen without argument.

I renew my recommendation that the present law be so amended as to enable the judge of the police court to sentence constant offenders to long terms of imprisonment. It is absurd to hope to reform or in any way benefit a person who has fallen so low as to become a regular inmate of the work-house, while the longest term of imprisonment authorized by law is ninety days. With longer terms and a proper system of rebate of time for industry and good behavior, some effort may be made for reformation. Industries may be taught, which will not only reduce the expense of supporting the prisoners, but will enable them to earn a respectable living when their term of service shall have expired.

I have heretofore recommended, and now urge most strongly, that a house of refuge or reformation be established in connection with the asylum, for colored boys who are now sentenced to the work-house for petty offenses, and whose enforced association with the lowest class of criminals soon makes them members of our rapidly increasing criminal class. With comparatively small outlay the remaining army and navy magazine buildings might be utilized for this purpose. The law should be so amended as to enable the judge of the police court to sentence these boys to the house of refuge until they shall arrive at the age of eighteen, with proper provision for their release at the discretion of your board. Throwing aside all question of sentiment or humanity, and recognizing the fact that it is easier to prevent a person from becoming a criminal than to reform him, the interest of the community at large demands that this action shall be taken. Many of these boys are absolutely without friends or homes; are sent down, not because they are bad, but because the world affords them no other place; and at the end of their terms they constantly importune me to allow them to remain. The parents of others, obliged to go out to service, and therefore unable to properly restrain the boys, have also begged me to keep them in the work-house beyond their term of confinement. Under the present arrangement I am obliged either to turn them upon the streets, knowing that they will immediately return to the work-house and take another lesson in crime, or transfer them to the almshouse to be trained as ignorant paupers.

The question of the care of the so-called "mildly insane" has been discussed in an informal manner during the past year, and it has been suggested, or directed, that that class of people should be cared for at this institution. This practice obtained many years ago throughout the larger portion of the civilized world. But philanthropists and others, who have devoted their whole lives to the consideration of questions connected with the management of the unfortunate classes, have wrought a decided change in public opinion, and in the most enlightened communities throughout the United States such disposition of that class will no longer be tolerated. If there be not actual abuse, there is always suspicion of it, and probably more scandals, founded and unfounded, owe their birth to this practice than to any other. If the Commissioners desire these people to be cared for under their own jurisdiction, or desire, in other words, to establish an insane asylum here, it will be necessary to provide for a separate and suitable building and for proper attendants. Should my recommendation, made in other reports, for the purchase of land on the east side of the eastern branch of the Potomac River be adopted, such a building might be erected there. In this connection, I desire to call your attention to the protest of the visiting physician, against "the sending of persons suspected of insanity, or actually insane, to this hospital for safe-keeping."

Some years ago I recommended the abolition of one of the offices of

resident physician, and the appointment of a resident student. The large increase of work in the medical department—as shown by the fact that for the year ending June 30, 1879, the total number of prescriptions was 8,700, while for the year ending June 30, 1881, the total number of prescriptions was 15,122—renders it necessary, in my opinion, that the office should be restored, and I have, therefore, provided for it in my estimates. I recommend, however, that with this provision for an additional resident physician, there shall be inserted a clause limiting the term of office to two years, the first year as junior, and the second as senior. The visiting physician is of opinion, with myself, that such a provision will be for the best interest of the asylum.

At the beginning of the year, the asylum dining-room, and the overseer's dining-room and kitchen were in a condition which rendered them utterly unfit for occupancy. These rooms, which are located in the basement, were dimly lighted and illy ventilated by small square windows near the ceiling. The brick floors were undermined by rats, and the earth underneath was saturated with poisonous matter, which, from many years washing of the floors, had soaked between the loosely laid bricks. In order to make them decent and comfortable, the following work was done: In the asylum dining-room, the brick pavement taken up and the saturated soil beneath removed to the depth of two feet, and replaced by fresh clay; 222 square yards of brick pavement relaid, set and jointed in cement; 287 square yards of hard finished plastering; the iron and wood work painted; three large windows cut, and areas made. New benches, tables, and dishes were furnished, and on Christmas day, for the first time in the history of the institution, the inmates ate their dinner in a comfortable, cheery, well-ventilated room. In the overseer's kitchen and dining-room, 199 square yards of plastering was done; 57 square yards of pavement was relaid in the same manner as in the asylum dining-room; new doors were put in; the small windows were replaced by large ones with areas; and the rooms were generally renovated and made habitable.

In the store-room and laundry 57 square yards of pavement was laid, 199 square yards of plastering done, and general repairs made as in the other rooms. The hall was repaired in a similar manner by 28 square yards of paving, and 114½ square yards of plastering. In all these rooms the saturated earth was removed to the depth of the foundations and replaced by clay, as in the asylum dining-room. The office-rooms have been painted and grained, and 226 square yards of hard-finish plastering has been laid. The furnace rooms were renovated, and the floors concreted. The hospital kitchen was thoroughly repaired. Two hundred feet of brick and stone gutter was relaid adjoining the Congressional Cemetery; 244 feet of board fence, eight feet high, was built around the work-house grounds; 75 feet of brick retaining wall was built; and 100 feet of fence reset around the cottage yard. The ward formerly occupied by male prisoners was thoroughly repaired and cleansed, and is now occupied by white male paupers taken from the crowded ward below. Four hundred and forty-one feet of brick walk, four and a half feet wide, was laid; 11,970 feet of blind ditch, three feet wide and three feet deep, was laid, broken brick being used for filling; 559 feet of six-inch sewer pipe with brick man-hole was laid to replace rotten wood trunk, and proper connections were made with the different hospital buildings; 186 feet of wire fence, and 220 feet of board fence, eight feet high, were made. A brick wall, 21 feet 6 inches long and 11 feet high, was built, running from the almshouse to the kitchen, and separating the male and female inmates. Very many other repairs and im-

provements of minor importance were made. Six hundred and four pairs of shoes were repaired by work-house labor. Seven hundred and fourteen coffins were made, of which 542 were furnished to the health department. Fifteen hundred and forty-seven days' work of prisoners, one hundred days' work of overseers, and fifty days of horse and cart labor were furnished the engineer department for the improvement of H street northeast.

During the winter, it being impossible to transport the garbage and night-soil down the river on account of the ice, I was directed to receive it. There were delivered 492 tons of garbage, and 2,542 barrels of night-soil, which was buried in pits dug for the purpose. From a portion of this material 770 barrels of dry fertilizer was manufactured.

Ten thousand heads of cabbage were raised. Large quantities of other vegetables were also raised, but as they were gathered and consumed from day to day, it is impossible to make an estimate of the quantity. Several bushels each of strawberries, grapes, and other fruits were raised and distributed among the inmates of the almshouse and hospital. Ninety-five fruit trees and a number of small-fruit bushes and vines were planted.

Five thousand seven hundred and four pounds of prime pork was killed.

From an artificial pond sufficient ice was cut to supply all branches of the asylum till the present date.

The following statistical tables, and estimates for the next fiscal year, are presented:

STATISTICAL TABLES.

WORK-HOUSE.

Gain and loss from July 1, 1880, to June 30, 1881.

Number in work-house July 1, 1880.....	149
Number received.....	1,910
	<hr/> 2,059
Number discharged.....	1,878
Number eloped.....	54
Number died.....	3
	<hr/> 1,935
Total number in work-house June 30, 1881.....	124

Color and sex.

White males.....	595
White females.....	233
Colored males.....	785
Colored females.....	297
Total.....	<hr/> 1,910

Daily average of inmates in Washington Asylum.

From July 1, 1876, to June 30, 1877.....	312
From July 1, 1877, to June 30, 1878.....	319
From July 1, 1878, to June 30, 1879.....	327
From July 1, 1879, to June 30, 1880.....	341
From July 1, 1880, to June 30, 1881.....	351
Aggregate number July 1, 1881.....	<hr/> 306

Nativity of inmates.

District of Columbia	556	Ireland	168
Maryland	370	Germany	37
Virginia	470	England	14
Pennsylvania	69	Sweden	9
New York	62	Scotland	5
Massachusetts	32	France	3
Ohio	18	Italy	3
North Carolina	12	Russia	2
South Carolina	11	Prussia	2
Kentucky	10	Austria	2
New Jersey	7	Canada	2
Maine	5	Switzerland	1
Missouri	5	Norway	2
Alabama	4	Jamaica	2
Illinois	4	New Foundland	1
Tennessee	4	West Indies	1
Rhode Island	3	South America	1
Connecticut	2	Turkey	1
Vermont	2	East Indies	1
Indiana	2		
West Virginia	2	Total foreign birth	257
Louisiana	2	Total native birth	1,653
Delaware	1		
Total	1,653	Total	1,910

Charges.

Vagrancy	802	Obscene and insulting language...	2
Disorderly	623	Being a professional thief	2
Profanity	242	Driving through a funeral	1
Carrying concealed weapons	73	Interfering with a funeral	1
Indecent exposure	33	Concealed weapons and trespass on park	1
Trespass on park	18	Refusing to assist a Metropolitan Police officer	1
Destroying private property	24	Cruelty to animals	1
Throwing stones	15	Selling liquor without license	1
Destroying public property	11	Violating hack law	1
Fast driving	5	Refusing to pay hack hire	1
Concealed weapons and profanity	5	Concealed weapons and vagrancy	1
Concealed weapons and disorderly	5	Throwing snowballs in street	1
Profanity and disorderly	4	Destroying public property and vagrancy	1
Committing a nuisance	4	Concealed weapons and destroying private property	1
Disturbing religious worship	4	Placing dirt in street	1
Using illegal scales	3	Escaped and recaptured	9
Business without license	3		
Maintaining a nuisance	2	Total	1,910
Firing a pistol in street	2		
Violating cart law	2		
Failing to remove snow from sidewalk	2		
Injuring private property and profanity	2		

ALMSHOUSE.

Gain and loss from July 1, 1880, to June 30, 1881.

Number in almshouse July 1, 1880	120
Number received	137
	257
Number discharged	132
Number died	11
	143
Total number remaining June 30, 1881	114

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Color and sex.

White males	47
White females	37
Colored males	26
Colored females	27

137

Nativity.

District of Columbia.....	37	Louisiana	1
Virginia.....	27	Massachusetts	1
Maryland.....	17	Ireland.....	26
New York.....	4	Germany.....	11
Pennsylvania.....	3	England.....	1
Illinois.....	3	Scotland.....	1
West Virginia.....	2		
North Carolina.....	2		137
Maine.....	1		

Coffins used at asylum and health office, and burials in Potter's Field, from July 1, 1880, to June 30, 1881.

Months.	Coffins furnished health office.	Coffins used at asylum.	Burials in Potter's Field.
July.....	50	5	51
August.....	37	4	42
September.....	41	12	48
October.....	38	10	38
November.....	38	5	38
December.....	61	7	54
January.....	45	9	47
February.....	58	12	57
March.....	45	5	43
April.....	51	7	47
May.....	43	12	41
June.....	41		27
Total.....	542	88	533

Estimate for support of Washington Asylum for fiscal year ending June 30, 1883.

SALARIES.

Commissioner and intendant.....	\$1,200
Matron	600
Visiting physician	1,200
Resident physician	490
Resident physician.....	360
Clerk	480
One overseer.....	800
Nine overseers, at \$600 each	5,400
Baker.....	420
Engineer	600
Assistant engineer.....	300
Hospital cook.....	120
Asylum cook.....	60
Overseer's cook.....	60
Five nurses, at \$60 each	300
Blacksmith	300
Hostler.....	60
Total salaries	12,740

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 131

Contingent expenses, including provisions, fuel, forage, lumber, hardware, shoes, dry goods, drugs and medicines, improvements, and repairs	41,260
Completing workhouse	1,000
Total	55,000

Very respectfully,

GEO. A. CASWELL,
Commissioner and Intendant, Washington Asylum.

The COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

APPENDIX M 1.

REPORT OF PHYSICIAN.

WASHINGTON, *September 1, 1881.*

SIR: I have the honor to submit the following annual report of the Washington Asylum Hospital for the year ending June 30, 1881:

Number of admissions from July 1, 1880, to June 30, 1881	592
Number of births (including two still births)	25
Remaining in hospital June 30, 1880	48

Total	665
Number discharged from July 1, 1880, to June 30, 1881	523
Number of deaths from July 1, 1880, to June 30, 1881	90

Total loss	613
Remaining in hospital June 30, 1881	52

Classification:

Male adult, white	168
Male children over 5 and under 15 years	1
Male children under 5 years	9

Total	178
Female adult, white	115
Female children over 5 and under 15 years	7
Female children under 5 years	1

Total	123
Male adults, colored	121
Male adults, colored, over 5 and under 15 years	12
Male adults, colored, under 5 years	12

Total	145
Female adults, colored	134
Female children over 5 and under 15 years	2
Female children under 5 years	10

Total	146
Admitted from at large	427
Admitted from Asylum	45
Admitted from prison	120

Total	592
Sick-call at work-house and number present at sick-call from July 1, 1880, to June 30, 1881	5,795
Number of prescriptions dispensed	4,345

Average of daily sick-call	15.87+
Sick-call at almshouse; number present from July 1, 1880 to June 30, 1881	2,976
Number prescriptions dispensed	2,659
Average daily sick-call	8.56+
Total number of prescriptions	15,122
Average daily prescriptions	41.426+

NATIVITY.

Ireland, 80; Germany, 30; England, 6. Total, 116. District of Columbia, 119; Maryland, 122; Virginia, 148, all other States, 87. Total, 505.

From the foregoing statement it will be seen that there has been a large increase in the number admitted into the hospital over previous years. Allowing a fair amount of space for each bed, 75 patients can be accommodated in the several wards. During five months of the past year we were not only compelled to crowd the wards to such an extent as to barely allow passage-way between the beds, but were obliged to fit up one of the houses in the magazine grounds for hospital purposes, where from 10 to 25 patients were treated for several months. In no month of the year has the number of inmates fallen below 50; the highest number, 126. Some of the wards have been filled to their utmost capacity the entire year.

The past winter was an unusually severe one, bringing to all the charitable institutions of the District for the care of the sick a much greater number of sufferers than ever before. As far as this hospital was concerned, it can be truly stated that all demands upon it have been promptly met. Whilst, as above stated, overcrowding was unavoidable, in all other respects the sick and disabled were cared for as they presented themselves, and none were turned away for want of accommodations.

It is to be hoped that in the future no such strain will be put upon the hospital, as regards room for the sick. The crowding during last winter was sometimes fearful, and far beyond safe limits.

Several capital operations were performed during that time, successful as far as life was concerned in all but one, but tedious and protracted in recovery from impurities consequent upon overcrowding, and which no means at our command was sufficient to overcome.

The increase in the number of admissions during the year, whilst due in chief part to the severe winter, as above mentioned, cannot be ascribed to that cause alone. Compared month by month with previous years we have had during the past year and up to the present time such average increase as to satisfy me that the class of patients usually sent here appreciate the care taken of them, and return again when sick, and that as the population of the District is augmented the greater is the demand upon its charitable institutions.

In view of these facts, it is well to provide as far as possible for such increase. The need of additional accommodation has been mentioned and urged in the several annual reports I have had the honor to forward.

In renewing these recommendations I do so with still stronger convictions of their necessity. At least two new wards, constructed upon improved sanitary principles, are necessary for the proper care of those sent to the hospital.

The addition of an examining and operating room to each of the wards is a much needed improvement, as is also the introduction of gas in every ward.

It is a source of pleasure to record the success which has attended the efforts of the medical staff in behalf of those committed to their care. The death rate—13+ per cent. of the number received into the hospital, and less than 1 per cent. including in the estimate the number under treatment in the alms and work houses—will bear comparison with that of similar institutions elsewhere. The lying-in department has been managed with gratifying results, not one maternal death and but one child dying during the year.

I desire to call attention to, and strongly condemn, a practice of late, assuming such shape as to make its mention a necessity—the sending of persons suspected of insanity or actually insane to this hospital for safe-keeping. It is simply an act of cruelty to the person sent, and an injustice to the management of the asylum. There are no provisions here for the care of such cases. They are a source of anxiety and care to the attendants, already sufficiently worked, and of dread to the patients. When they become dangerous and violent, as has been often the case, personal restraint, the cell, and straight-jacket have to be resorted to until they can be sent to the insane asylum, to which place they ought to have been sent in the first instance.

We have the records of attempted suicide, arson, violence and threats to attendants and inmates, to satisfy us that however mild the form of insanity may appear, there is a period of excitement in all cases, sooner or later developed, with results as above stated, and it is a matter of surprise, as well as congratulation, that no tragedy has yet been enacted in our midst.

If such should occur, I protest, in advance, against any responsibility being attached to the management of the Asylum; for those sending them have full knowledge of what they do, and have the power and means of properly providing for all such cases.

On account of the small compensation (\$5 per month) paid our nurses, we are obliged to put up with very indifferent services in many respects, and changes are of frequent occurrence. As only one nurse for each ward is allowed, the work is often very hard, too much so to enable them to attend to all their duties efficiently. Hence apparent neglect and occasional untidiness. They are, as a general rule, taken from among such patients as show some aptitude for such service; but if they happen to be strong and a little ambitious, they soon seek for more remunerative employment, or, being unsteady and restless in disposition and of bad habits, they soon tire and return to their former mode of life. All this can be obviated by giving such pay as will secure the services of able-bodied as well as trained nurses. I hope this matter will receive serious consideration.

In my last report, I recommended the employment of a drug clerk to attend to the dispensary. We have a daily average of 41 prescriptions, not only to be put up, but to be labeled, recorded, and dispensed, and the various other duties connected with the dispensary are fully sufficient to engage the time of one person. All these duties now devolve upon the medical officer, and prevent them from doing many things of importance in connection with their hospital work; I mention particularly a full medical history of important cases. As it is now, many important observations are unavoidably lost to us.

The sanitary and hygienic condition of the alms and work houses has been entirely satisfactory during the past year. No epidemic has visited either of these institutions, and good order and discipline have been well maintained.

Respectfully, &c.,

JNO. I. DYER, M. D.,
Visiting Physician, Washington Asylum.

GEO. A. CASWELL, Esq.,
Commissioner, Washington Asylum.

Death-rate.

Diseases.	White males.	White females.	Colored males.	Colored females.	Total.
Apoplexy	2		2		4
Senile debility	4	3		4	19
Phthisis pulmonalis		1	5	12	18
Congestive chill			1		1
Diarrhea, chronic		1	1		1
Delirium tremens	1				1
Paralysis	1				1
Exhaustion				1	1
Syphilis, congenital			1		1
Congestion of the brain			2		2
Pleuritis, chronic	1				1
Peritonitis, chronic			2		2
Pneumonia, chronic				1	1
Cerebral hemorrhage	1	1			2
Pneumonia, acute		2	2		4
Nephritis, acute			1	2	3
Fracture of skull	1			1	2
Pleuro-pneumonia	1				1
Bronchitis, acute				1	1
Valvular disease of the heart			1	2	3
Puerperal peritonitis				1	1
Pleuritis, acute	1				1
General debility	1	1			1
Syphilis, tertiary		1			1
Erysipelas		1			1
Congestion of lungs			3	1	4
Pyæmia			2		2
Dysentery		1			1
Convulsions			1		1
Umbilical hemorrhage			1		1
Softening of the brain			1		1
Meningitis	1	1			2
Variola, confluent	1				1
Lead poisoning	1				1
Ascites				2	2
Total	16	13	34	7	90

APPENDIX M 2.

ESTIMATES.

WASHINGTON ASYLUM, D. C.

WASHINGTON, *September 24, 1881.*

GENTLEMEN: The estimate of expenses of the Washington Asylum for the next fiscal year is as follows:

SALARIES.

Commissioner and intendant	\$1,200
Matron	600
Visiting physician	1,200
Resident physician	480
Resident physician	360
Clerk	480
One overseer	800
Nine overseers, at \$600	5,400
Baker	420
Engineer	600
Assistant engineer	300
Hospital cook	120
Asylum cook	60

Overseers' cook.....	60
Five nurses, at \$60.....	300
Blacksmith.....	300
Hostler.....	60
Total salaries.....	12,740
Contingent expenses, including provisions, fuel, forage, lumber, hardware, shoes, dry goods, drugs and medicines, improvements and repairs.....	41,260
Completing workhouse.....	1,000
Total.....	55,000

Respectfully,

GEO. A. CASWELL,
Commissioner and Intendant Washington Asylum.

HON. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

X.—REPORT OF COLUMBIA HOSPITAL FOR WOMEN AND LYING-IN ASYLUM.

COLUMBIA HOSPITAL,
Washington, D. C., November 9, 1881.

GENTLEMEN: The board of directors of the Columbia Hospital for Women and Lying-in Asylum herewith transmit the annual reports from the surgeon-in-charge, the advisory board of physicians and surgeons, and the matron; as also the treasurer's statement of receipts and expenditures, with the necessary certificates.

It needs but the reading of these papers to make clear both the growing usefulness of the hospital, and the importance of the special place it fills in ministering to those in sickness and suffering.

We call your especial attention to the explanation given both by the surgeon-in-charge and by the advisory board as to the very pressing necessity for the enlargement of the hospital building; and we ask your aid in securing the appropriation from Congress of the money needed for it. Without it, we shall have reason to dread the return of the unfavorable causes which have operated against our full success in treatment during the past year. With the moderate outlay it will require, the comfort of the inmates will be promoted, and our power for usefulness largely increased. We press the matter for the thoughtful consideration of the Commissioners and of Congress.

Respectfully, on behalf of the board,

WILLIAM PARET,
President.
NOBLE YOUNG,
Vice-President.

HON. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

To the Board of Directors, Columbia Hospital for Women and Lying-in Asylum:

GENTLEMEN: During the fiscal year ending June 30, 1881, 1,032 patients received treatment at the Columbia Hospital for Women.

Of these 721 belonged to the out-door department and 371 were inmates of the hospital.

The accompanying tabulated statement furnishes such information as will lead to a correct understanding of the amount and character of the work accomplished during the year just closed.

There are several matters of importance to which I would respectfully call your attention.

As you will perceive, the mortality (7) during the past fiscal year is greater than that of any preceding year since the hospital has been under my care. This will be accounted for in part by the character of the cases that terminated fatally, and in part also by an outbreak of puerperal fever in the colored lying-in ward.

Of the 7 deaths occurring 2 were from malignant disease of the uterus, 2 from tuberculous inflammation of the bowels, 2 from puerperal septicæmia, and 1 was from eccholic thrombosis following phlegmasia alba dolens.

On February 9, 1881, the time of the outbreak of puerperal fever, there were in the house 19 obstetrical patients, 7 white and 12 colored, 2 of each awaiting confinement, the colored lying-in ward being full to its utmost capacity. It was deemed advisable, as a precautionary measure, to send out the 2 undelivered colored patients. A sufficient time had elapsed between the delivery of 3 of the patients and the outbreak of the fever to remove all danger of infection, thus leaving 12 exposed. Of this number 5 were affected with the fever, 2 mildly and 3 severely. Two of these succumbed to its effects; the others finally recovered. The 7 who escaped did not by any means make satisfactory recoveries from parturition; swollen glands and threatened mammary abscesses, giving unmistakable evidence of the presence of septic poisoning.

After the subsidence of the fever the colored lying-in ward was closed to patients; thoroughly fumigated with sulphurous acid, chlorine, and ozone; scoured with carbolized water, and two coats of whitewash (carbolized) were carefully applied, while the woodwork of the entire ward was either painted or varnished. Bedding, linen and ward utensils underwent a thorough process of disinfection, and no labor or care was spared in the use of means to effect the destruction of any remaining contagium. In addition to these measures, the ward was subjected to the low temperature of an exceptionally severe winter.

On April 13, 1881, the sanitary condition of the white lying-in ward became far from good, its vitiated atmosphere being made evident by the unsatisfactory recoveries. A patient awaiting confinement was transferred to the old colored lying-in ward. On the evening of the fourth day after delivery her pulse was 112, temperature 104.2°, and though many days elapsed before there occurred any change for the better, her unfavorable symptoms were not assigned to a distinctly septic influence, as previous to her confinement she was in a generally poor condition, and a speedy convalescence had not been anticipated.

On April 21, 1881, a new patient in excellent condition, admitted during the first stage of labor, was delivered in an adjoining room in the same ward. Her accouchement was natural in all respects, and there was no cause whatever for anxiety until the fourth day, when her temperature rose from 100° on the evening of April 24, to 101.6° on the morning of the 25th. Both pulse-rate and temperature continued to rise until the evening of the fifth day, when her pulse was 130 and temperature 104°, and it became evident from the accompanying symptoms that the case was a typical one of virulent puerperal septicæmia. A detailed history of this patient's illness, however interesting from a medical point of view, is not subject-matter for a report of this kind, and it

is sufficient to say that after having been at the point of death for more than a week, with a pulse at times too rapid to be counted, and temperature ranging from 103° to 105.9° , convalescence finally set in and progressed, with but one severe relapse, until patient left for her home on May 24.

There is no difficulty in ascertaining the cause of this outbreak. From September 8, 1880, to March 23, 1881, the lying-in cases were exposed almost continuously to septic influences, not only because of the crowded condition of the two lying-in wards, but also because of their proximity to the medical and surgical wards; emanations from the foetid discharges almost constantly present in the surgical ward permeating both lying-in wards.

The necessity for a complete separation or isolation is apparent from what I have stated, and hence the necessity of having two distinct departments of the hospital. I would earnestly urge what in my annual report of last year was recommended, viz, that the building be extended on the west wing, in order not only to afford proper accommodations for the dispensary and assistants, but also to increase the capacity of the medical and surgical ward, where cases during the time of recovery from surgical operations can be freed from the annoyance incident to occupancy in the main ward. There are at present no separate rooms for such purposes, and the need of such apartments is daily apparent. I would also recommend that from the pay-patient fund now on hand another cottage be erected upon the grounds surrounding the hospital, using it as a delivery room from which patients can be transferred to the main building to await convalescence.

Your attention is invited to the urgent necessity for placing an elevator in the building. The need of such a convenience becomes more and more apparent. The limited number of servants at our disposal renders the serving of meals in the different wards a matter of serious difficulty, and we are compelled to require all those who are at all able to walk, to come down stairs to their meals. This is a source of discomfort, fatigue, and in some instances suffering to the patients. Then again, it is often a matter of considerable difficulty to get very ill patients to the wards and to remove patients to and from the operating room. The ascent and descent of several flights of stairs is very trying at times, and the remedy which an elevator would supply should be furnished at the earliest possible moment.

Another matter which demands consideration is the placing of fire escapes upon the building. The experience of the past year gives ample evidence of the necessity for affording this means of protection to the inmates. Two fires occurred on the premises during the year—one in the main building, and one in the stable. The former resulted from a burning match being thrown into a register by one of the patients; it coming in contact with some inflammable material, ignited and broke out into what might have been a very serious fire. The fire department responded promptly, however, and by their decisive and efficient action stamped it out before any headway was obtained. I desire to return my sincere thanks to the officers and men of the department for their timely services and well-directed efforts on the occasion named. This fire might have resulted in serious loss of property, and perhaps life. In addition to the precautions already taken to prevent the repetition of such an accident, I would earnestly recommend the construction of fire escapes, whereby exit from the upper floors can be readily had. The cause of the fire at the stable is as yet unknown.

The water supply of the building is inadequate, and it is suggested

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that a tank be erected in the upper story, and a force pump be supplied, whereby the tank may be kept constantly filled, and a sufficient supply for all purposes guaranteed.

I have to thank most sincerely the gentlemen of the advisory board of physicians and surgeons for their uniform kindness and courtesy, and to acknowledge my indebtedness to the nurses and employés for their faithful discharge of duty.

Your obedient servant,

P. J. MURPHY,
Surgeon-in-charge.

Patients in hospital July 1, 1880	23
Patients admitted during the year.....	348
Total treated during the year ending June 30, 1881.....	371
Discharged during the year.....	338
Died during the year.....	7
	345

Remaining in hospital July 1, 1881..... 26

Prescriptions compounded during the year 2811

Death rate for the year, 1.88 per cent.

■ The daily average, exclusive of infants, dispensary patients and employés, has been for—

1880.		1881.	
July	32. 91	January.....	35. 93
August.....	35. 18	February.....	37. 43
September.....	33. 39	March.....	38. 42
October.....	34. 24	April.....	32. 23
November.....	39. 63	May.....	36. 73
December.....	38. 97	June.....	29. 46

For the year, 35. 37.

NATIVITIES.

Canada	1	Missouri.....	1
Connecticut.....	1	New Hampshire.....	3
District of Columbia.....	63	New Jersey.....	1
England.....	11	New York.....	14
France.....	4	North Carolina.....	2
Georgia.....	2	Ohio.....	2
Germany.....	13	Pennsylvania.....	14
Illinois.....	1	South Carolina.....	2
Ireland.....	20	Vermont.....	2
Italy.....	1	Virginia.....	134
Maine.....	1	Wisconsin.....	1
Maryland.....	67		
Massachusetts.....	7	Total.....	371
Mississippi.....	3		

White, 225; colored, 146; total 371.

I.—OBSTETRICAL CASES.

Delivered before June 30, 1880, but in hospital July 1, 1880.....	7
Delivered during the year ending June 30, 1881.....	143
Result unknown.....	35
In hospital undelivered July 1, 1881.....	8
Total.....	193
In house July 1, 1881, delivered but not discharged.....	9

Maternal mortality.....	3
Infantile mortality.....	9
Cases of puerperal fever.....	6
Phlegmasia alba dolens.....	1
Still-births.....	5
Abortions.....	2
Miscarriages.....	6
Forceps deliveries at superior straits.....	3
Forceps deliveries at inferior straits.....	3
Adherent placenta.....	5
Retained placenta.....	2
Post-partum hæmorrhage.....	4
Prolapsus funis.....	1
Breech presentations.....	3
Footling presentations.....	2
Contracted pelvis, antero-posterior.....	1
Cases of twins.....	3

Sex of children:	
Male.....	75
Female.....	70
Unknown.....	1
	146

CAUSES OF DEATH.

Maternal:	
Puerperal septicæmia, death on 6th day.....	1
Puerperal septicæmia, death on 11th day.....	1
Phlegmasia alba dolens with pulmonary thrombosis, death on 21st day.....	1
Total.....	3
Puerperal death rate for year is 2.09 per cent. of deliveries.	

Infantile:	
Atelectasis pulmonum, living 22 hours.....	1
Inanition, living 61 hours.....	1
Inanition, living 4 days.....	1
Inanition, one of twins, living 36 hours.....	1
Inanition, one of twins, living 4½ days.....	1
Pyæmia and inanition, living 27 days.....	1
Inanition and premature at 7½ months, living 2 days.....	1
Convulsions, death from exhaustion, living 18½ days.....	1
Unknown, premature at 8 months, supposed syphilis, living 3 hours.....	1
Total.....	9
Infantile death rate for year 6.47 per cent.	

Of the still-births 1 was at full term, cause prolapsus funis, the patient being admitted during the second stage of labor; 1 at full term, cause unknown, patient entering advanced in second stage; and 3 were premature at 5½, 6½, and 7 months, respectively, cause unknown. Total 5. The 2 abortions were at the 2d and 3d months, cause unknown. Of the 6 miscarriages, 3 were still-born; 2 were advanced to 7½ and 8 months, and subsequently died; while 1 at 8 months lived.

Wet nurses supplied, 4.

II.—MEDICAL AND SURGICAL CASES.

Diseases.	Cured.	Relieved.	Unrelieved or incurable.	Result unknown.	Died.	In house.	Total.
Abscess of anterior vaginal wall.....		1					1
Abscess pelvic.....	2						2
Abscess of vulvo-vaginal gland.....	2						2
Athymia mammae.....	1	1					3
Amenorrhœa.....	1	2					3
Asterixio uteri.....		1					1
Stenosis vaginae.....	1						1
Brucititis, chronic.....				1			1
Carcinoma uteri.....		1	7			1	9

II.—MEDICAL AND SURGICAL CASES—Continued.

Decrease.	Cured.	Relieved.	Unrelieved or incurable.	Result unknown.	Died.	In house.	Total.
Cellulitis, pelvic.....		1					1
Chloro-anæmia.....		2					2
Cystitis, chronic.....		1					1
Cystitis, chronic, and tuberculous inflammation of bowels.....		1			1		1
Cystocele.....		2					2
Cysto-sarcoma of ovary.....					2		2
Diarrhœa, chronic.....					1		1
Dysmenorrhœa.....	1	2		1	1		4
Elongatio cervicis uteri.....						1	1
Endo-cervicitis.....	11	1		1			13
Endo-cervicitis with epilepsy.....				1			1
Endo-cervicitis, chronic.....	1	1		1			3
Endo-cervicitis, chronic, with hysteria.....	1						1
Endo-cervicitis, chronic, with prolapsus uteri.....						1	1
Endo-metritis.....	12	3				1	16
Endo-metritis and rectitis.....	1						1
Endo-metritis with retroversio uteri.....	1						1
Endo-metritis, chronic.....	8	8		4		1	21
Endo-metritis, chronic, with laceratio cervicis uteri.....	1	2					3
Endo-metritis, chronic, with prolapsus uteri.....		3				1	4
Endo-metritis, chronic, with ulceratio cervicis uteri.....	2						2
Epithelioma vulvæ.....						1	1
Fibroids uteri.....	1	7				1	9
Fistula in ano.....	1						1
Fistula, recto-vaginal.....	1						1
Fistula, vesico-vaginal.....		1					1
Hysteria.....	3	1					4
Hypertrophia cervicis uteri.....		1					1
Laceratio cervicis uteri.....		1					1
Leucorrhœa.....	3	1					4
Menopause.....		3					3
Menopause and hemorrhoids.....		1					1
Metritis, acute.....	1	1					2
Metritis, chronic.....	1						1
Metritis, chronic, and fistula in ano.....	1						1
Ovarian neuralgia.....	1						1
Ovarian tumor.....	1	1		1			3
Parametritis.....		2					2
Polypus uteri.....	2			1			3
Prolapsus uteri.....	1	1					2
Prolapsus uteri with endo-cervicitis and hypertrophic enlargement of cervix uteri.....	1						1
Prolapsus uteri with ulceratio cervicis uteri.....		1					1
Retroversio uteri.....	2			1		1	4
Retroversio uteri with endo-cervicitis.....	1			1			2
Ruptio perinæ.....	1		1				2
Scirrhus mammae.....	2		1				3
Stricture of rectum and inflammation of vulvo-vaginal gland.....	1						1
Subinvolutio uteri.....	3						3
Suppressio mensium (malarial).....	1						1
Suppressio mensium (pregnancy).....				3			3
Vaginitis.....	5	4					9
Vaginitis specific.....				1			1
Total.....	81	58	9	17	4	9	178

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Principal operations performed during the year on patients, all with some disease peculiar to their sex.

Diseases.	Cured.	Relieved.	Unrelieved or incurable.	Result unknown.	Died.	In house.	Total.
Abscess, mammary.....	6						6
Abscess of anterior vaginal wall.....		1					1
Abscess, scrofulous.....		1					1
Abscess of vulvo-vaginal gland.....	3						3
Abscess, pelvic.....	2						2
Adenoma, mammae.....	2						2
Amputation of cervix uteri.....	1					1	2
Chronic cystitis (artificial vesico-vaginal fistula).....		1					1
Cysto-sarcoma of ovary aspirated.....					1		1
Fibroid uteri enucleated.....	1						1
Fistula in ano.....	2						2
Fistula, recto-vaginal.....	1						1
Fistula, vesico-vaginal.....		1					1
Lipoma of left shoulder.....	1						1
Laceratio cervicis uteri.....	1						1
Ovarian tumor.....	1						1
Polypus uteri.....	2						2
Ruptio perineæ, primary.....	3						3
Ruptio perineæ, secondary.....	2		1				3
Scirrhus mammae.....	2						2
Stricture recti.....	1						1
Total.....	31	4	1	0	1	1	38

Report of the Columbia Hospital Dispensary for the fiscal year ending June 30, 1881.

Patients under treatment at date of last report.....	33
Patients received during the year.....	688
Total treated during the year.....	721
Cured.....	317
Relieved.....	132
Unrelieved or incurable.....	27
Result unknown.....	119
Died.....	0
Sent to hospital.....	85
Under treatment at date of this report.....	41
Prescriptions compounded.....	1,414

Combined statement of hospital and dispensary.

	Hospital.	Dispensary.	Total.
Patients under treatment at date of last report.....	23	33	56
Patients received during the year.....	348	688	1,036
Total treated during the year.....	371	721	1,092
Cured.....	219	317	536
Relieved.....	58	132	190
Unrelieved or incurable.....	9	27	36
Result unknown.....	52	119	171
Died.....	7	0	7
Sent to hospital.....		85	85
Under treatment at date of this report.....	26	41	67
Number of births.....	143	4	147
Prescriptions compounded.....	2,811	1,414	4,225

To the Board of Directors of Columbia Hospital:

GENTLEMEN: We have the honor to submit a report of the advisory board of physicians and surgeons of this hospital for the fiscal year ending June 30, 1881.

The successful results of treatment employed in the hospital are again evident, and a source of congratulation to all concerned, and although the rate of mortality has somewhat increased, this need not excite sur-

prise when the character of the cases is considered as shown by the record.

From our experience, observations and constant inspections, we are prepared to state that we do not feel that the outbreak of puerperal septicæmia was due to any negligence or want of care on the part of any one connected with the institution, but rather to a lack of accommodations for lying-in cases, and their thorough separation and isolation from the surgical patients; and we feel it our duty to again renew the suggestion and recommendation made to the board of directors in our last annual report in regard to the extension of the building.

During the prevalence of this disease the most careful and especial attention was paid to cleanliness and disinfection, though apparently, and as is generally the case, without much benefit; and, as a matter of interest, it should be mentioned that of all the obstetrical cases treated in the new cottages, in no instance has an unfavorable symptom developed, thereby confirming the wisdom displayed in their erection; and it is suggested that, in case an appropriation for the extension of the building cannot be obtained, an additional cottage be erected.

The records of the hospital show an increase in the number of outdoor patients of over two hundred and fifty (250), which is gratifying evidence that the benefits of this charity are fully appreciated.

It is still evident that the water supply of the building is deficient, and it is suggested that some means be adopted to meet this want, and we reiterate our recommendation for the introduction of hot and cold water into the consulting and operating room.

We learned with regret that our recommendation for the publication of a report of cases treated in the hospital since our connection with the institution failed to meet with approval. As there is a constant and ever increasing demand for such information as this report could furnish, we again renew the suggestion.

Under the able, conscientious, and careful management of the present surgeon-in-charge, the affairs of the hospital have prospered, and we again, as heretofore, express our appreciation of his valuable services.

Respectfully submitted.

Z. T. SOWERS, M. D., *Secretary*.
J. O. STANTON, M. D.
JAMES T. YOUNG, M. D.
H. C. YARROW, M. D.
ROBERT REYBURN, M. D.

TREASURY DEPARTMENT,
FIRST COMPTROLLER'S OFFICE,
Washington, D. C., November 7, 1881.

SIR: Your account with the United States for the "Columbia Hospital for Women and Lying-in Asylum, District of Columbia, 1881," fourth quarter 1880, and first and second quarters 1881, has been examined and adjusted, per report of the First Auditor, No. 227174, and a balance of \$7.33 found due the United States, agreeing with your statement of the same.

Very respectfully,

WM. LAWRENCE,
Comptroller.

JOHN T. MITCHELL, Esq.,
*Treasurer Columbia Hospital for Women
and Lying-in Asylum, Washington, D. C.*

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John T. Mitchell, treasurer, in account with Columbia Hospital.

1880.			
Aug. 12.	To draft on United States Treasury.....	\$3,750 00	
Sept. 30.	By vouchers to date.....	3,508 92	
	30. Balance on hand.....		\$241 08
	30. To balance on hand.....	241 08	
Nov. 24.	To draft on United States Treasury.....	3,750 00	
1881.			
Mch. 12.	To draft on United States Treasury.....	3,750 00	
		7,741 08	
Mch. 31.	By vouchers, two quarters to date.....	7,437 24	
	Balance on hand.....		303 84
	31. To balance on hand.....	303 84	
Apr. 23.	To draft on United States Treasury.....	3,750 00	
		4,053 84	
June 30.	By vouchers to date.....	4,046 51	
	Balance on hand.....		7 33

Statement of amounts received from pay patients, and expended, for fiscal year ending June 30, 1881.

1880.			
July 1.	Balance on hand.....	\$642 79	
Sept. 30.	Amount received for quarter.....	\$506 00	
Dec. 31.	Amount received for quarter.....	1,083 00	
1881.			
March 31.	Amount received for quarter.....	838 00	
June 30.	Amount received for quarter.....	1,161 00	
		3,588 00	
		4,230 79	
June 30.	By vouchers for one year to date.....	1,347 21	
	Balance on hand.....		2,883 58

We have examined the vouchers for this account and as above stated, and find them correct.

H. A. WILLARD,
F. A. ASHFORD,
Auditing Committee.

Classification of expenditures of Columbia Hospital for Women and Lying-in Asylum, for the fiscal year ending June 30, 1881, as per duly-approved vouchers.

	Treasury account.	Pay-patient account.
Surgical instruments.....	\$69 80	
Medical supplies.....	611 10	
Stationery, books and periodicals.....	20 55	\$56 78
Materials, house furnishing.....	586 70	102 07
Salaries, including pay-roll.....	4,712 50	500 00
Fuel.....	480 08	357 18
Care.....	278 30	60 20
Ice.....	231 95	
Repairs, &c.....	909 21	171 00
Contingence.....	6,972 53	100 00
	14,902 67	1,347 21
Balance on hand.....	7 33	2,883 58
	15,000 00	4,230 79

JOHN T. MITCHELL,
Treasurer.

144 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Special appropriation for isolated cottages.

1880.		
Aug. 12.	To draft on United States Treasury	\$3,000 00
1881.		
Feb. 24.	By voucher of Riordan & Driscoll	2,995 00
	Balance on hand	\$5 00

H. C. YARROW,
JOHN T. MITCHELL,
P. J. MURPHY,
Building Committee.

RECAPITULATION.

Amount expended from appropriation for fiscal year ending June 30, 1881.	\$14,992 67
Amount expended from pay-patient fund for fiscal year ending June 30, 1881	1,347 21
Amount expended from special appropriation for isolated cottages	2,995 00
Total	19,334 88
Average daily expenditure	52 91½

The daily average cost per diem for each patient is \$1.49½, which includes the erection of isolated cottages, repairs upon the building and grounds, and all other expenses incurred during the fiscal year ending June 30, 1881.

To the Board of Directors, Columbia Hospital for Women, Washington, D. C.:

GENTLEMEN: In compliance with section iv, chapter xi, of the by-laws, I have the honor to present the annual report of all personal property under my care belonging to the hospital, a correct account of which will be found in the accompanying record.

Your obedient servant,

P. J. MURPHY,
Surgeon-in-Charge.

To the Board of Directors, Columbia Hospital for Women :

GENTLEMEN: I have the honor to submit for your inspection the accompanying account book, which contains an accurate statement of the number of pay patients for the fiscal year ending June 30, 1881, with the dates of their admission and discharge, and the receipt of the treasurer for all money received from them.

Your obedient servant,

A. L. S. THOMBS, *Matron.*

P. J. MURPHY, M. D.,

Surgeon in Charge Columbia Hospital for Women :

SIR: Herewith I beg leave to submit an inventory of bed and table linen, and all hospital property under my charge, which has been examined by the committee on personal property.

Yours very respectfully,

A. L. S. THOMBS, *Matron.*

WASHINGTON, *October 1, 1881.*

I have periodically inspected the hospital and property in its use, and have made a careful examination of the same just previous to this report. I find the expenditures for household furniture and property of all kinds to have been made with a strict view to economy. The supply is no more than absolutely necessary. Due care seems to have been habitually taken for the preservation of all the articles belonging to the hospital.

E. D. TOWNSEND,
Of Committee on Property.

APPENDIX N.

ESTIMATES.

COLUMBIA HOSPITAL FOR WOMEN AND LYING-IN ASYLUM.

Salaries:

Surgeon-in-charge.....	\$1,800
Matron	600
General expenses, including subsistence, light, fuel, employment of nurses, servants of all classes, general repairs to building, and care of grounds, in addition to the amount received from pay patients.....	12,600
Total	15,000
For new wing on west side of main building to correspond with the east wing, giving increased accommodation for lying-in patients, and surgical wards, rendered imperative by the increased number of patients; and to give accommodations to the surgeon in charge and his assistants.....	_____

This additional estimate is recommended by the board of directors and advisory board of surgeons.

P. J. MURPHY,
Surgeon-in-Charge.

JOHN T. MITCHELL, *Treasurer.*

O.—REPORT OF THE CHILDREN'S HOSPITAL.

WASHINGTON, D. C., *October 1, 1881.*

GENTLEMEN: I present herewith for your consideration, a report of the practical workings of the Children's Hospital of the District of Columbia, from December 1, 1880, to October 1, 1881, embracing a period of ten months. Upon an examination of the last annual report of the hospital for the year ending December 1, 1880, a copy of which was submitted to you, it will be found that 57 children were under treatment at that date. During the ten months from December 1, 1880, to September 30, 1881, 114 children have been admitted, 68 white, 46 black, making a total of 171 children under 16 years of age who have received medical and surgical treatment, with all their wants supplied by the institution, during the time stated, and making a daily average of 40.46 patients, and leaving at this date 47 children under treatment.

On the 1st of December, 1880, 75 children were under treatment in the dispensary; and from that date to September 30, 1881, ten months, 793 patients have been admitted, 275 white, 523 black, making a total of 873 patients in this most important branch of the hospital who have received surgical and medical treatment; and adding thereto the 172 hospital patients, those who have occupied beds in the hospital, makes a total of 1,045 suffering children who have been the beneficiaries of this

charitable institution. During the time stated 6,160 prescriptions have been compounded, 2,826 for hospital patients and 3,334 for those in the dispensary, and 32 surgical operations have been performed. Of the 171 patients treated in the hospital during the ten months, 58 were cured and discharged, 41 improved and removed by their parents, and 5 unimproved and removed, and 20 have died, leaving under treatment September 30, 1881, 47 patients.

This exhibit will, it is believed, impress you with the usefulness, as also the necessity, of an institution of this character, which has contributed so largely to the amelioration of the suffering class of our population, who have found relief through its benevolent workings, and at a mere nominal expense to the District government; Congress appropriating each year simply \$5,000 towards its maintenance and support, and the moiety of which alone is charged to the District government.

Since the date of the organization of the hospital, December 2, 1870, to the present, embracing a period of eleven years, it has been principally supported by the voluntary contributions of our philanthropic citizens, and through whose liberality the board of directors have been able to construct a hospital with all the modern improvements and appliances, requisite for the purposes for which it was founded, which is an ornament to our city, and recognized as *superior* to any institution of the character in the country.

From the treasurer's report, it will be found that the receipts and expenditures on account of the hospital, from December 1, 1880, to September 30, 1881, ten months, were as follows:

Amount of cash on hand December 1, 1880.....	\$453 73
Received balance of Congressional appropriation for fiscal year terminating June 30, 1881.....	2,500 00
General receipts, including subscriptions and donations.....	2,270 34
Installment of Congressional appropriation for fiscal year terminating June 30, 1882.....	1,250 00
Total receipts.....	6,473 07

The disbursements from December 1, 1880, to October 1, 1881, ten months, for the maintenance and support of the hospital, are as follows:

HOUSE EXPENSES.

Marketing, groceries, bread, milk, coal and wood, gas, ice, dry-goods, and pay of matron, nurses, and servants.....	\$3,591 96
Drugs, medicine, and surgical instruments.....	645 46
Repairs, plumbing, furniture, advertising, printing, postage, stationery, and telephone.....	1,454 10
Interest on notes due on account of building.....	680 00
Total disbursements.....	6,371 50

Cash on hand October 1, 1881, \$102.57, which, with the balance of the Congressional appropriation of \$5,000, for the fiscal year terminating June 30, 1882, \$3,750, makes a total of \$3,852.57 for the maintenance and support of the hospital for the eight months terminating June, 30, 1882.

The only paid employes of the hospital are the matron, 4 nurses, and 5 servants, making a total of ten; which, added to the 171 patients, makes a total of 183 persons, including the resident physician and his assistants, who have been inmates of the hospital during the past ten months. The daily expense for the actual maintenance during that time, less the cost of medicine, surgical instruments, books, stationery, improvements, and interest, is a fraction over 65 cents per day for each

person, or \$1.16 and a fraction per day, if including the gross expenses, with the interest account, expended during the time stated. It will be found upon an examination of the records and accounts of the hospital, that its affairs are conducted with the greatest economy, and that thorough system prevails in its respective departments.

During the ensuing year, it is believed that the indebtedness of the hospital, amounting to \$7,000, will be paid, which will lessen the annual expenditure in the matter of interest.

During the past month a tank has been constructed, which will furnish the respective wards of the hospital with an abundant supply of water, which is so necessary, not only for the health and comfort of the inmates, but for the security of the building in the event of fire.

The grounds of the hospital have been improved, and it is contemplated to make further improvements during the next year by planting shade trees and laying out the grounds; and when completed, will present an attractive appearance, and add materially to the improvement of the convalescent patients of the institution.

The thanks of the board of directors and lady visitors, are tendered to your board, for the introduction of a gas lamp in front of the building on W street, and for the promise given by you for the improvement during the fall, of the roadway on that street, and the approaches to the hospital; which, when completed, will add materially to the convenience of the physicians and others identified with the institution, and who have business with it; as this roadway, since the construction of the building, has been almost impassable during the winter, rendering it difficult and dangerous in reaching it; and as the demands upon the hospital are increasing each year, every facility should be afforded by your board to our citizens, in reaching it without difficulty; and we therefore respectfully request that the proper estimates may be made by you for the permanent improvement of this street.

In conclusion, the board of directors and lady visitors of the institution, would be gratified if the members of your board, collectively or individually, would make *monthly inspections* of the hospital, to enable you to determine the effectiveness of its workings, and the economy and system characterizing its management, with reference to embracing in your annual report to Congress, recommendation for the appropriation of \$5,000 towards its maintenance and support.

I have the honor to be, with great respect, your obedient servant,
 SAMUEL V. NILES,
President Children's Hospital.

Hon. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

P.—REPORT OF THE INDUSTRIAL HOME SCHOOL.

WASHINGTON, D. C., November 15, 1881.

GENTLEMEN: We herewith transmit the annual report of the board of managers of the Industrial Home School of the District of Columbia, showing the operations of the institution for the year ending June 30, 1881.

Respectfully,

C. M. MATTHEWS,
President.
 H. W. BLACKFORD,
Secretary.

Hon. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

The Commissioners of the District of Columbia :

GENTLEMEN: In behalf of the board of managers of the Industrial Home School we beg to present the following report for the past year :

In so far as our report relates to receipts and expenditures of money, it is made to cover the fiscal year ending June 30, 1881; but in order more fully to show the condition and progress of the institution, it has been deemed desirable to extend the report to the 30th day of September last.

The revenues of the school for the last fiscal year were as follows :

July 1, 1880:	
Amount on hand	\$451 51
Appropriation of Congress	10,000 00
District Commissioners, maintenance of paupers	1,430 80
District Commissioners, tree-boxes, &c.	3,175 24
Tree-boxes, tables, &c., sold	63 76
Other sources	555 62
	<hr/>
	15,676 93
	<hr/>

Expended :

Salaries and entire help	3,177 23
Repairs and permanent improvements	1,433 73
Tree-box lumber	2,375 97
Shoe findings	125 01
Furniture, including crockery and tinware	482 54
Provisions, including milk	3,323 23
Hardware, not including stoves	307 47
Clothing, including dry goods	1,392 28
Incidentals, including fuel and horse feed	1,404 34
	<hr/>
	14,021 80
	<hr/>

Balance on hand June 30, 1881	1,655 13
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In explanation of the foregoing, it should be stated that the school as yet derives no revenues from any of the industries connected therewith, except from the manufacture and sale of tree-boxes; and, as will be seen from the statement elsewhere given, the expense incident to that branch of industry very nearly equals the amount received from the sale of the work, leaving as the main reliance for the support of the institution the appropriations made by Congress. In its proper order we propose to show that the amount thus received is inadequate to the wants of the school, and to assign what seem to us potent reasons for a more liberal appropriation.

A change in the office of superintendent was made February 15, caused by the resignation of Mr. L. Barnes. Mr. W. S. Stockbridge was employed as his successor, at an annual salary of \$1,000, which amount is to cover the salaries of matron and housekeeper.

The number of inmates cared for from October 1, 1880, to September 30, 1881, is, boys 69, girls 40, total 109.

Of these, the number received during the year is 37.

Died	1
Left the school by permission	33
Left the school without permission	6
Provided with homes	20
Returned to friends	12
Number of inmates September 30, 1881	69

IMPROVEMENTS.

The greenhouse referred to in the last report has been completed and put in practical operation, and will receive in another place a description more in detail.

The grounds immediately surrounding the main building have been graded and ornamented with flower beds.

In addition to the swimming-pond a small fish-pond has been excavated, for which the excellent spring adjacent to the houses furnishes an abundance of water.

The cottage provided for in the appropriation for the present fiscal year was contracted to be built for the sum of \$4,606, and on the 28th day of May ground was broken in the presence of many friends of the institution, and with appropriate ceremonies. The building is now rapidly approaching completion, and will be ready for occupancy before the beginning of winter.

As an adjunct to the cottage, a brick spring-house has been erected, at an expense of \$165.

Other improvements of a minor character have been made, all of which serve to add greatly to the comfort and convenience of the Home.

SCHOOLS.

The experience of each succeeding year serves only to increase the gratitude of the managers to the board of trustees of public schools for their generous action in organizing schools and providing teachers for the same at the Home.

The meager appropriation for the Home was thereby relieved of an enormous outlay, and the result has shown that the children have made better progress in their studies. In fact when the varied ages, mental attainments, and former conditions of the pupils are considered, the public school at the Home will compare favorably with the other schools of the District. At the annual exhibition of drawing and penmanship of the public schools of the district, held at Franklin school building, this school was represented in both of these branches of instruction. In addition, the industrial processes were represented by a class of pupils engaged in shoemaking.

There were also exhibitions of scroll-sawing, and samples of sewing, bread and cake making, and a miniature representation of landscape gardening. The exhibition attracted much attention, and was favorably commented upon by the large number of visitors present.

There being many of the children who are below the school age, it became necessary to establish a school to be conducted on the Kindergarten system. The result has been highly satisfactory.

At the beginning of the present school year seven of the pupils were found to be qualified for a grade higher than that taught at the Home and it was thought best to permit them to attend the proper school in Georgetown.

In view of the fact that a portion of the time of some of the pupils must be applied to instruction in the industrial branches in hours which interrupt the regular school studies, it is hoped that the board of trustees will provide special rules which will meet the case and thus permit the two branches of education to be carried on without interfering with each other.

THE INDUSTRIES.

Aside from the special schools connected with the Home, under the discreet management of the superintendent, all boys who possess the age and strength so to do, are from time to time employed in work varied in nature, such as preparing walks on the grounds, attending to household duties, cultivating the garden, and such other acts of labor as occasion

may require. It is of course true that they can only perform boys' labor, and as a rule performed it after the manner of boys. They have neither the age nor the strength to enable them to assume entire charge of any given task, nor, as a rule, have they the habits of industry to lead them voluntarily to work faithfully when not under the eye of a superintendent. Still, the results are all that could have been expected from any class of similar age. Through an arrangement made by the superintendent with the contractor for building the cottage, the boys entered into a subcontract to excavate the cellar. They were allowed pay for this, and completed the job with alacrity. Many of them were allowed to plant small gardens, the products of which were to be their own. All started in with zeal, but many lost their enthusiasm with the advent of hot weather, while others faithfully continued to the end with creditable results.

In connection with this class of industries, it may be proper to refer to the

HOME GARDEN.

The report of the superintendent shows that the living expenses have been materially lessened this year by the success of the garden, to which the labor of the boys has to a large degree contributed. Not only have the expenses been reduced, but the inmates have been provided with a more bountiful and varied table.

THE GREENHOUSE.

The facilities for teaching horticulture were enlarged during the year by the erection of a propagating house wherein the pupils have been taught the process of growing plants by the objective method, each pupil doing the work prescribed by the teacher. The house is 103 feet long by 24 feet wide, and cost about \$2,000. An appropriation of \$200 was recently made by the board of managers for the purpose of stocking the house with winter flowering plants, and it is hoped that this branch of industry will prove to be an attractive and profitable feature of industrial training.

SHOEMAKING DEPARTMENT.

The report of the teacher of shoemaking shows that 43 pupils have attended this school during the year, 9 of whom have been in attendance the entire term, and 34 from two to eight months. The school was divided into four classes of eight pupils each, the time given each class being two hours per week. Forty-five pairs of shoes were made and sixty-seven pairs half-soled.

WOOD-WORK.

This branch of industry has been restricted mainly to the manufacture of tree-boxes and stakes for the parking commissioners of the District, for the reason chiefly that such work can, at least, be made to pay expenses, and sometimes it yields a small profit.

For several years all the tree-boxes used by the parking commissioners have been supplied by the Home. Several scroll-saws have been provided for the school, in the use of which the boys show a willing readiness to engage.

THE SEWING-SCHOOL.

Two sewing classes of girls have been organized, and each receive five hours' instruction a week by a competent teacher. The younger class is

taught overhanding, felling, hemming, and the making of patchwork, while the older class is instructed in finer sewing and the putting together of garments. Besides sewing, the girls old enough for the task have regular household duties to perform each day, and those most mature are taught bread-making and plain cooking.

THE HEALTH OF THE INMATES.

The location of the school has been known for years prior to its present use as a remarkably healthful one. Its elevated situation insures pure air, while the never-failing spring furnishes a constant supply of pure water. With many of the children when first entering the school the results of former unfavorable sanitary conditions of life are painfully apparent, but a residence of a few months at the Home seldom fails to remove all traces of ill health when not caused by diseases inherited from dissolute parents.

The present year, however, has been marked with an unusual amount of sickness, owing to the advent of the measles among the children. At one time 26 were ill with the disease. No adequate hospital accommodations were at hand, and a hospital-room had to be improvised and nurses employed. But one death occurred, that of Cora Gray, aged four years. This, with a death which occurred in 1878, is the extent of the mortality list since the school has occupied its present location.

Moved by a realization of the need of better provision to meet such exigencies, some of the friends of the institution held a fair at the house of Dr. J. F. R. Appleby, in Georgetown, which resulted in securing a fund of \$120 for hospital purposes.

The swimming-pool has proved to be an excellent sanitary feature for children of both sexes, to whom it is a never failing attraction in the summer. Its usefulness is further shown in the fact that seventeen of the inmates learned to swim during the last season.

The managers desire to express their thanks to the directors of the Children's Hospital, who have very kindly granted them the privilege of sending children needing special treatment to that excellent institution.

As a summary of the proceedings of the year, it can be said the Home has made greater advances than in any previous year. More has been accomplished in every department with a proportionately smaller outlay of money.

We feel it is but simple justice to state that much of this is due to the efficiency of our superintendent. Under his supervision the premises have been greatly improved externally and internally, better discipline prevails among the children, and in the purchase of articles needed for the Home a great reduction in prices has been effected.

THE OBJECT AND WANTS OF THE HOME.

Before closing this report the managers beg to add a few words respecting the Home for the better information of the public, hoping thereby to enlist the good citizens of the District in efforts in its behalf. The Industrial Home School supplies a much needed want in the way of public charity in the District. It is not an orphan asylum, although orphans are admitted. It is not reformatory, but on the contrary seeks for its inmates those who are not naturally vicious. It is rather a child-saving institution to which are admitted children of either sex, who are left in such condition of life as to endanger their future usefulness in the world. They may be orphans or they may be the children of dissolute parents. There is no institution aside from this to which the last named class can

be sent—or they may be the children of destitute parents. While the parents may find refuge in the almshouse, it will be conceded that an institution of that kind, even when most favorably managed, is hardly a proper place in which to rear young children. The same may be said of children of mothers who are committed to our prisons. For all these classes the Home provides the only refuge among our public charities. In caring for such inmates it is intended to afford a moderate education for the head and the hand. As rapidly as is consistent with the welfare of the children, suitable homes are provided them, usually in the country. The last year has been a fortunate one in this respect, there having been more of a demand for children than the Home could supply from those who were of sufficient age to be sent out, which demand has doubtless been created through a better knowledge on the part of the public of the system on which the Home is conducted. The applications for admission to the Home have been largely in excess of our ability to grant, and in many cases great hardship has been the result.

We need more room and more money.

Viewed from the standpoint of charity, the management think large appropriations should be provided. It is better to prevent pauperism by fitting these children for the struggle of life than to permit them to grow up as mendicants.

Viewed from the standpoint of economy, the Home deserves better recognition. It is more economical to prevent crime than to punish it. The expense incurred in the conviction and punishment of juvenile offenders in the District far overbalances what would answer the purposes of the Home in the prevention of crime.

By carefully taking children from unworthy parents, by educating them and training them in habits of industry, by surrounding them with refining and moral influences, and providing them with profitable homes, the state will lessen its future army of vagabonds, and reduce the number of crimes and criminals.

Our object is to give back to the District in return for money expended on the Home, good men and women who, under other influences, would probably become either paupers or criminals.

JOSEPH M. WILSON.

W. W. CURTIS.

M. H. DOOLITTLE.

HULDAH W. BLACKFORD.

Q.—REPORT OF THE SEALER OF WEIGHTS AND MEASURES.

WASHINGTON, D. C., *September 30, 1881.*

GENTLEMEN: I would respectfully call your attention to the condition of the public hay scale at Tenth street and Louisiana avenue, northwest. Since its location at that point it has frequently required repairs, the latest occasion being within the month of August ultimo. If carefully used it may last during the year, but not much longer. I respectfully suggest that it would be well to ask an appropriation of \$500, or so much thereof as may be needed, to purchase a new scale and to repair such of the others as may from time to time require it.

I am, your obedient servant,

JAMES SMALL,

Sealer of Weights and Measures for the District of Columbia.

HON. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

R.—ESTIMATE OF THE ENGINEER IN CHARGE OF THE WASHINGTON AQUEDUCT AND THE BRIDGES IN THE DISTRICT OF COLUMBIA.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., August 19, 1881.

SIR: Your letter of the 15th instant (No. 15399), addressed to Lieut. Col. Thomas Lincoln Casey, Corps of Engineers, requesting to be furnished with estimates of the amount required for the fiscal year, ending June 30, 1883, for the support of the Washington aqueduct and of all bridges in the District of Columbia under the charge of the Engineer Department, has been submitted to this office.

The estimates referred to are as follows, viz:

WASHINGTON AQUEDUCT.

For engineering, maintenance, and general repairs	\$20,000
For construction of the dam at Great Falls	200,000
For improving grounds at the receiving reservoir	1,000
For building fences around government lands at the receiving reservoir	7,000
For soiling, sodding and seeding the embankment and excavation slopes of the distributing reservoir and of the conduit	15,000
For building an overfall over the conduit for the waste water of the receiving reservoir	2,000
For continuing the macadamizing of the conduit road	10,000
	<hr/> \$255,000

CARE AND REPAIR OF BRIDGES.

For ordinary care of Benning's, Anacostia, and Chain bridges, including fuel, oil, lamps, matches, &c	2,000
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Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. J. DENT,
President Board of Commissioners of the District of Columbia.

S.—ESTIMATE OF THE TRUSTEES OF THE REFORM SCHOOL.

REFORM SCHOOL OF THE DISTRICT OF COLUMBIA,
Washington, September 28, 1881.

GENTLEMEN: I have the honor to submit the following estimates of appropriations required by the Reform School of the District of Columbia, for the fiscal year ending June 30, 1883, viz:

SALARIES.

1 superintendent	\$1,500
Assistant superintendent	1,000
4 teachers, at \$750 each	3,000
Matron of school	600
1 matron of family	180
1 matron of family	144
Farmer	540
Superintendent of chair shop	500

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1 shoemaker.....	\$300
1 baker.....	300
1 engineer.....	300
1 tailor.....	180
1 seamstress.....	144
1 dining-room servant.....	144
1 chambermaid.....	144
1 laundress.....	144
1 florist.....	240
1 cook.....	180
1 watchman.....	360
2 watchmen, at \$360 each.....	720

10, 620

SUBSISTENCE.

Groceries.....	\$5, 000
Flour.....	3, 000
Meat.....	2, 000
Dry goods.....	2, 600
Leather.....	600
Gas.....	600
Coal.....	2, 200
Hardware, table and woodware.....	554
Furniture.....	600
Farm implements and seed.....	600
Harness and repairs of the same.....	300
Fertilizers.....	500
Stationery and books.....	300
Plumbing, painting and glazing.....	600
Medicine and medical attention.....	600
Miscellaneous expenses.....	1, 000

21, 054

HEATING APPARATUS, STOCK, ETC.

For purchase of two new boilers and repairing to the heating apparatus...	\$5, 000
For purchase of stock.....	1, 000
For fencing.....	1, 000
Total.....	7, 000

The heating apparatus is not only inadequate for the wants of the school, but is nearly worn out, and it will hardly answer for the present winter, and it is indispensably necessary that new boilers be purchased, and the present heating arrangements overhauled before next winter. An appropriation for this purpose is earnestly requested by the board of trustees.

There is no fencing of any amount upon the premises, and the amount asked for this purpose is very much needed. Also the amount asked for the purchase of stock, as a great deal of the stock now on hand will have to be disposed of and other purchased in its stead.

It is the earnest wish of the board that you will give these estimates your careful attention, and recommend the same to Congress.

Very respectfully, your obedient servant,

A. J. FALLS,
President of the Board of Trustees.

Hon. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

MEM.—The report for fiscal year ending June 30, 1881, made to Attorney-General. Report for 1882 will be made to Commissioners of the District of Columbia, pursuant to law of March 3, 1881.

T.—REPORT OF THE CENTRAL FREE DISPENSARY.

OFFICE CENTRAL FREE DISPENSARY
AND EMERGENCY HOSPITAL,
Washington, D. C., August 31, 1881.

GENTLEMEN: I am instructed by resolution of the board of directors of the Central Dispensary and Emergency Hospital to bring to your attention the great worth of the remedial charity we have in charge, and to ask that in your next annual estimates it may be placed upon the regular list of public charities, and that an annual appropriation of \$5,000 be asked for its support from Congress, to be disbursed by the Commissioners of the District of Columbia.

The last annual report of the dispensary (copy herewith) shows that during the year ending March 31, 1881, nearly 19,000 prescriptions had been given and compounded in the institution; that it had, during that year, been visited by nearly 6,000 new patients, and that 171 surgical operations had been performed.

With such a showing as this, we may surely hope to be classed among the public charities of the city.

In addition to this we have, since July 1, 1881, in order to meet a pressing public need, embodied in our institution an emergency hospital, and have removed to a central location, at a heavy increase of expense, in order to afford the best facilities for receiving and attending all casualty and accident cases. That the service has proved a desideratum, we need only refer to the police reports to demonstrate how completely it has met the public needs.

In a work of this character the service constantly and rapidly extends, and the expense is proportionately increased. It has even now outgrown the slender and precarious support of private contributions, and we are compelled to appeal for Congressional aid.

With commensurate funds the service can be lifted beyond the griping economies which so frequently paralyze the best professional effort.

I am yours, respectfully, &c.,

J. B. WILSON,
President.

Hon. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

ANNUAL REPORT OF THE CENTRAL FREE DISPENSARY OF THE DISTRICT OF COLUMBIA.

THE CENTRAL FREE DISPENSARY.

(416 Tenth street, between D and E streets, northwest.)

Open daily from 1 to 3 p. m., Sundays and legal holidays excepted.

The payment of \$5 per annum constitutes a contributing member.

Number of new cases treated from April 1, 1880, to March 31, 1881, 5,575. Number of prescriptions filled, 18,952.

This institution furnishes, without charge, medical and surgical aid and medicines to the sick poor of the District of Columbia.

It is designed to relieve and restore to health and labor the poor who are afflicted by sickness.

It restores to many their only means of support, and thus prevents pauperism and crime.

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It vaccinates all who apply.

It is the most important sanitary protector, and by far the most inexpensive charity, ever established in this city.

It is beneficial to the taxpayers, for it keeps many of the sick poor and their families from becoming a charge on the city, in the hospital and almshouse.

Its managers and attending physicians all serve without pay.

It is largely dependent upon voluntary contributions for its support.

To enable it to do this useful and humane work, it asks from you an annual contribution for its necessary expenses.

It needs this from YOU and THE FRIENDS of the sick poor now.

Contributing members are requested to pay their annual dues to the treasurer of the dispensary on or before the 1st day of April, each year.

All who desire to obtain a better personal knowledge of the necessity for such institutions, their practical work for and benefit to the sick poor, and their claims on the liberality of our citizens, are invited to visit the dispensary and judge for themselves.

"Withhold not good from them to whom it is due, when it is in the power of thine hand to do it. Say not unto thy neighbor, 'Go, and come again, and to-morrow I will give,' when thou hast it by thee."

OFFICERS.

JESSE B. WILSON, <i>President</i>	429 Sixth street, northwest*
JOHN A. BAKER, <i>Vice-President</i>	340 Indiana avenue.
B. U. KEYSER, <i>Secretary</i>	201 E steet, northwest.
D. W. MIDDLETON, <i>Treasurer</i>	1427 F street, northwest.

BOARD OF DIRECTORS.

JAS. W. BARKER.	W. G. METZEROTT.
F. HOWARD, M. D.	JAS. E. MORGAN, M. D.
JESSE B. WILSON.	WM. R. WOODWARD.
F. PILLING.	R. REYBURN, M. D.
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J. W. DREW.	JOHN A. BAKER.
P. R. WILSON.	A. PATZE, M. D.
N. S. LINCOLN, M. D.	W. C. BRISCOE, M. D.
A. Y. P. GARNETT, M. D.	G. L. MAGRUDER, M. D.
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JOHN WALTER, M. D.	RALPH WALSH, M. D.
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T. P. MORGAN.	B. U. KEYSER.
D. W. MIDDLETON.	

EXECUTIVE COMMITTEE OF BOARD OF LADY VISITORS.

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Mrs. D. J. MCCARTY, <i>Vice-President</i> .	Mrs. BRADLEY.
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Mrs. W. M. GALT.	Miss MEIGS.
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FINANCE COMMITTEE.

J. B. WILSON.	THOS. P. MORGAN.
WM. R. WOODWARD.	H. H. BARKER, M. D.
D. W. MIDDLETON.	

COMMITTEE ON SUPPLIES.

J. B. WILSON.	P. R. WILSON.
J. E. MORGAN.	J. W. BARKER.

Executive officer of attending staff, ex officio.

VISITING COMMITTEE.

Consists of two non-medical members of the board of directors, appointed monthly by the president of the board.

CONSULTING BOARD.

J. ELIOT, M. D.
J. E. MORGAN, M. D.
E. REYBURN, M. D.
S. S. LINCOLN, M. D.

F. HOWARD, M. D.
L. MACKALL, M. D.
A. PATZE, M. D.
A. Y. P. GARNETT, M. D.

ATTENDING STAFF.

DEPARTMENT OF DISEASES OF WOMEN AND OBSTETRICS.

(Monday and Thursday, 2 to 3 p. m.)

H. H. BARKER, M. D. No. 1116 H street, northwest.
J. A. TARKINGTON, M. D., assistant. No. 217 D street, northwest.

DEPARTMENT OF SURGERY AND SKIN DISEASES.

(Wednesday and Saturday, 2 to 3 p. m.)

W. C. BRISCOE, M. D. No. 317 C street, northwest.
L. K. BEATTY, M. D., assistant No. 128 Eleventh street, southeast.

DEPARTMENT OF GENERAL AND NERVOUS DISEASES.

(Tuesday and Friday, 2 to 3 p. m.)

JOHN WALTER, M. D. No. 1010 F street, northwest.
J. S. HARRISON, M. D., assistant. No. 1911 I street, northwest.

DEPARTMENT OF DISEASES OF CHILDREN.

(Monday and Thursday, 1 to 2 p. m.)

G. L. MAGRUDER, M. D. No. 310 E street, northwest.
R. T. HOLDEN, M. D., assistant. Corner of Third and G streets, southwest.

DEPARTMENT OF DISEASES OF EAR, THROAT, AND CHEST.

(Wednesday and Saturday, 1 to 2 p. m.)

RALPH WALSH, M. D. No. 332 C street, northwest.
G. W. COOK, M. D., assistant No. 1502 S street, northwest.

DEPARTMENT OF DISEASES OF THE EYE.

(Tuesday and Friday, 1 to 2 p. m.)

S. M. BURNETT, M. D. No. 1215 I street, northwest.
JOHN PARSONS, M. D., assistant. No. 416 Tenth street, northwest.

RESIDENT PHYSICIAN.

JOHN PARSONS, M. D.

RESIDENT STUDENT.

J. J. MARKRITER.

MATERNITY SERVICE.

Dr. H. H. BARKER, in charge.

VISITING PHYSICIANS.

THE ASSISTANT STAFF.

EXECUTIVE OFFICERS.

January and July	H. H. BARKER.
February and August	W. C. BRISCOE.
March and September	S. M. BURNETT.
April and October	G. L. MAGRUDER.
May and November	RALPH WALSH.
June and December	J. WALTER.

CLINICAL ASSISTANTS.

JOHN J. MARKRITER.
H. L. E. JOHNSON.
R. MUNSON.

T. N. McLAUGHLIN.
W. L. MILLER.
L. KOLIPINSKI.

JANITRIX.

Mrs. GEORGIE FEETE Dispensary.

ADDRESS.

WASHINGTON CITY, D. C., April 11, 1881.

To the Board of Directors of the Central Free Dispensary:

GENTLEMEN: In obedience to your instructions, the undersigned, your committee appointed to prepare and publish the annual report of the operations of the dispensary during the year ending March 31, 1881, beg to submit to you, to its patrons, and to the public, the following statement of cases treated, which has been carefully elaborated from the books of current record by the attending staff, which, with its tabulated recapitulation, cannot fail to impress the most casual observer with the magnitude and importance of the noble work we have in charge.

It is surely a sublime scheme of remedial philanthropy which can point as its results to the fact that during the year just closed 5,575 applications have been made by the suffering poor; that not one has been refused the treatment which the case demanded; that the large number of 18,952 prescriptions have been compounded; that 171 surgical operations have been performed; that 13 persons were treated as in-patients, representing 75 days of maintenance; and that the total cost of this immense work has been but \$2,249.72.

The gentlemen of the attending staff who, with noble self-sacrifice and gratuitous contribution of time and talent, have wrought this record of well-doing, need no word of commendation from us. Any attempted expression of thanks would be but feeble effort, falling far short of the occasion. Reward, if it can be furnished in this world, must be found only in the consciousness of having consecrated their time and capabilities to the fulfillment of the divine command.

In the early part of the year it was found that in consequence of the limited space afforded by the premises then occupied for dispensary purposes, the best attainable results could not be secured, and it was deemed advisable to obtain the use of the adjoining dwelling at a rent for the two slightly in excess of what had been originally paid for one. This increased accommodation has proved to be of great utility; but even now, with enlarged demands for dispensary services, comes the necessity for more commodious premises, and the question of providing for this want has pressed itself upon the board.

The dispensary is open for applicants on every day of the week (except Sunday) from 1 o'clock until 3 o'clock, but it is generally found that these hours are materially extended. Whilst so open, the rooms and passage ways of the building are occupied by a throng of patients waiting their turn for treatment, which is given in regular order; and on the days of infant treatment the throng is of course far greater, for the reason that each little one is accompanied by one or both parents. This crowding necessarily occasions more or less confusion which is prejudicial to the best professional attention.

In this juncture the Commissioners of the District have happily come to our relief by offering to the dispensary the use of handsome and ample accommodations in a building about to be erected for police purposes at the northwest corner of Ninth street and New York avenue. This offer has been cheerfully accepted by the board.

The public architect in preparing for the building was directed to confer with the dispensary, and embrace such details for the portion to be allotted to that service as the experience of your board might show to be necessary. This has been done; the requisite funds are on hand, and the work of construction will be pushed rapidly forward to completion. It is expected that the building will be ready for occupation by November 1, 1881.*

* Since the above was written the proposed arrangements for enlarging the accommodations of the Dispensary have been modified. The Commissioners of the District having abandoned the project of erecting a building for police purposes at Ninth street and New York avenue, the dispensary has leased the large brick building at 416 Tenth street, between D and E streets, and adjoining the police station. This building will be at once fitted for occupation as a dispensary and emergency hospital, and it is expected to remove to that place July 1, 1881.

The importance of making some provision by means of an emergency hospital for cases of accident occurring within the city limits has long been felt by the board, and during the year just closed, fortified with data obtained through the courtesy of Major Brock, Chief of Police, and aided by the recommendation of the District Commissioners, a strenuous effort was made to obtain from Congress a small appropriation which would enable the dispensary, with the appliances already at its command, to establish immediately such an institution in connection with its more regular service. Unhappily the effort failed; but the good results of the attempt have crystallized into a proposition from the District Commissioners to embrace the emergency hospital service within the duties of the dispensary, providing means and accommodations for both in the new building, Ninth street and New York avenue.

This emergency hospital service does not aim to take permanent care of accident cases, but merely to take measures for temporary relief, perhaps involving transient sojourn at the dispensary until the patient is in fit condition for removal to his home or to some hospital. These accident cases—and they are of almost daily occurrence—are now taken to the nearest police station, and a physician summoned, who, when he reaches the place, often after long delay, finds himself hampered and prevented from giving proper professional attention for want of necessary apparatus and appliances.

At the proposed hospital, the cases arriving by means of the police ambulance, within a few moments of occurrence, would meet immediate and scientific treatment, for want of which many lives are now endangered.

The dispensary mourns the sudden death of Mr. W. H. Gibbs, who for many years performed with marked ability and zeal the arduous duty of apothecary to the institution. Suitable action was taken by the staff under whose immediate direction his service had been performed, and resolutions of sympathy and condolence were adopted and transmitted.

The *personnel* of the board has during the year undergone some change. Mr. Wm. M. Galt, who was president at the date of the last report, resigned that position. He was succeeded by Mr. T. J. Durant, who in turn resigned that position and his membership in the board. This latter's resignation left the board at the close of its year without a presiding officer, which accounts for the preparation of this report having been delegated to a committee.

At the date of the last report (April, 1880) the institution was receiving from the District government, out of the charity fund, a monthly allowance of \$200, which, with the private subscriptions from friends and patrons, barely sufficed to defray the heavy and growing expenses of a daily enlarging service; but in August, 1880, the Commissioners notified the board that in consequence of heavy demands upon that fund, rendered necessary by a long and rigorous winter, they would be compelled to reduce the monthly allowance to \$150 from and after August 1, 1881; at which figure it remains at this date. This reduction seriously cripples the resources and impairs the usefulness of the institution, and it behooves its friends and patrons to come to its assistance with private contributions.

For this aid we earnestly appeal to the charity and generosity of those whom God hath blessed, that they may be the instruments for blessing others.

Your committee find ample occasion of congratulation in the valuable services rendered to the institution by the energetic and zealous board of lady managers (Miss M. F. Waite, president), who have been instrumental in securing a large share of the contributions of funds of which the dispensary always stands in great need.

JESSE B. WILSON,
B. U. KEYSER,
SWAN M. BURNETT,
Committee.

REPORT OF ATTENDING STAFF.

To the Board of Directors of the Central Free Dispensary:

GENTLEMEN: In placing before you this, our tenth annual report, we have pleasure in announcing the increasing good work of the institution. The legitimate work of the dispensary is in excess of last year, and for the coming year bids fair to be much further extended.

We congratulate you, our friends and ourselves upon the prospect of a speedy removal to more commodious quarters, where our work can be more easily and thoroughly done.

We take pleasure in calling your attention to the fact that our institution is assuming importance from an educational point of view. The large number of patients and the great variety of diseases to be seen have been promptly recognized by the medical students of our city.

During the latter part of the last session, one day in each week was set apart for

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clinical instruction and the performance of the more important operations, at which time we found our rooms crowded with students.

With the opening of the fall term at the colleges, these facilities will be still further increased, and one of the prime objects of our organization be more thoroughly fulfilled.

There have been some changes in the assistant staff since last report. We have lost the services of Drs. Adams, McArdle, and Acker by resignation. Their places have been filled by the election of Drs. Cook, Holden, and Beatty. We have also had a sad loss in the death of our most efficient druggist, Mr. W. H. Gibbs.

We have created, at your suggestion, the posts of house physician and resident student. To the former of these Dr. Parsons has been elected, and to the latter Mr. J. J. Markriter.

To Dr. Parsons we are indebted for the preparation of the following synopsis of the cases treated during the year.

We are also indebted for dental service to Dr. Noble.

H. H. BARKER,
W. C. BRISCOE,
JOHN WALTER,
G. L. MAGRUDER,
RALPH WALSH,
SWAN M. BURNETT,
Attending Staff.

Tabular statement of diseases treated at Central Free Dispensary during the fiscal year ending March 31, 1881.

Diseases.	Number treated.	Diseases.	Number treated.
Abrasion	1	Catarrh, nasal	19
Abscess	6	Cellulitis, pelvic	5
alveolar	1	cervical	1
facial	1	Cephalalgia	37
maxilla	7	Cerebro-spinal meningitis	1
orbital	1	Cerumen, accumulation of	3
pelvic	1	Chalazion	21
perineal	1	Chancroid	47
pross	1	Chlorosis	1
uteri	1	Cholemia	1
of scalp	1	Chorea	4
Acne	10	Choroiditis disseminata	3
Adenitis, scrof	50	Condylomata	4
Alcoholism	5	Conjunctiva, ecchymosis of	4
Amaurosis	1	hyperæmia of	2
hysterical	1	Conjunctivitis	111
Amblyopia	1	catarrhal	1
Amenorrhœa	5	follicular	2
Anasarca	1	muco purulent	1
Ankylosis	1	peri keratitis	1
Ankyloglossia	10	phlycten	3
Anæmia	13	purulent	6
Anthrax	4	Constipation	232
Aphtha	5	Contusion	33
Arthritis	4	Convulsions	1
Ascariæ	11	Cornea, abscess of	1
Ascites	4	foreign body in	4
Asthenia	12	herpes of	3
nervous	118	leucoma	23
Asthma	13	perforation of	2
Astigmatism, myopic	1	staphyloma of	2
com. myopic	1	ulceration of	3
Atresia vaginæ	1	Corneal cystoid scar	1
Balanitis	6	Corns (Clavus pedis)	3
Blepharitis	34	Coryza	1
Bronchitis, acute	453	Cyclitis	1
capillary	5	Cystitis	7
chronic	3	Dacryocystitis	7
Bronchocele	1	Deafness	1
Bubo	33	Debility	90
Burn	6	from lactation	6
Cancer of uterus	1	senile	1
Calculus, vesical	3	Dentition	3
Caries of inf. max.	1	Diabetes	1
Caruncle, irritable	1	Diarrhœa	100
urethra	3	Diplopia	1
Cataract	14	Diphtheria	4
incip	4	Dislocation of humerus	1
secondary	1	knee joint	1
traumatic	2	thumb	1

Tabular statement of diseases treated at Central Free Dispensary—Continued.

Diseases.	Number treated.	Diseases.	Number treated.
Dislocation of toe	1	Heart, tobacco (Da Costa)	4
Dysentery	36	Hemicrania	1
Dysmenorrhea	16	Hemiplegia	2
Dyspepsia	245	Hernia	1
Dysuria	2	inguinal	30
Ear, ext. inf. of	1	inguinal double	5
mid., catarrhal inf. of	2	labial	1
mid., pur. inf. of	10	scrotal	2
Echymosis	7	umbilical	5
Ectropion	1	Herpes	8
Eczema	72	circin	6
facialis	1	labialis	5
impetig. of eyelid	6	zoster	4
Emphysema	1	Hordeolum	2
Enclente	49	Hydrarthrosis	1
Enchondroma	1	Hydrocele	4
Endocervicitis	12	Hydrocephalus	1
Endometritis	61	Hypermetropia	7
Enteralgia	13	Hypertrophy of nail	1
Enteritis	1	of nose	1
Enterocolitis	1	Hyphema ant. chamber	1
Enteropion	2	Hypochondriasis	2
Epididymitis	6	Hysteria	3
Epilepsy	13	neonant	3
Ephora	5	Impotency	1
Epikeratitis	2	Inanition	1
Epiotaxis	4	Indigestion	12
Erysipelas	5	Insomnia	1
Erythema	7	Intertrigo	1
Eustachian tube, inf. of	1	Irido-cyclitis	2
Excoriation	1	choroiditis	1
Exophthalmus	1	spec.	5
Exostosis	1	Keloid	4
Favus	2	Keratitis	40
Fever, catarrhal	8	diffus	5
continued	1	pannosa	1
intermittent	386	parenchymatous	1
remittent	6	phlycten	6
simple	2	punctata	1
Fish-bone in throat	1	vesiculosus	1
Fissure of rectum	1	with hypopion	1
Fistula in ano	6	Kerato-iritis	4
ves. vag.	1	Labia, cyst of	2
Flat foot (platypodia)	2	hypertrophy of	1
Flatulence	2	Lachrymal puncta, closure of	1
Folliculitis auris	6	Laryngitis	23
Foreign body in oesophagus	1	syphilitic	1
bladder	1	tubercular	1
ear	2	Leucoma adherens	4
Fracture of clavicle	3	Leucorrhoea	95
fibula	1	Lichen	15
finger	1	Lumbago	25
radius	2	Lumbricoides	112
radius and ulna	2	Malaria	126
Frost bite	3	Mammitis	2
Furuncle	8	Marsasmus	2
Gastralgia	5	Mastitis	1
Gastritis	1	Menorrhagia	23
Gastrodynia	1	Menses, retarded	6
Gingivitis	2	suppression of	80
Gland, enlarged	4	Menstruation, irreg.	1
indurated	2	vicarious	2
Glaucoma	2	Metrorrhagia	18
Gleet	16	Migraine (hemicrania)	1
Gonitis	1	Miscarriage	3
Gonorrhoea	78	threat	2
Gonorrhea	1	Morbus, Brightii	2
Gonorrhea	1	coxarius	1
Gonorrhea	1	Myalgia	11
Gonorrhea	1	Myopia	3
Gonorrhea	2	Nevus	2
Gonorrhea	10	Nasal duct, strict. of	4
Gonorrhea	27	Necrosis of tibia	2
Heart, aortic stenosis	6	Nephritis	1
aortic and mit. sten.	1	Neuralgia	60
debility of	10	facial	3
irritable	20	intercostal	1
fatty	1	sup. orbital	1
mit. regurg.	19		

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Tabular statement of diseases treated at Central Free Dispensary—Continued.

Diseases.	Number treated.	Diseases.	Number treated.
Nyctalopia	1	Spermatorrhœa	6
Odontalgia	53	Spine, angular curvature of	1
Occlusion of pupil	2	injury of	3
Edema of ankle	1	lat. cur. of	1
of eyelid	1	Spinal irritation	1
Onychia	4	Spleen, enlarged	1
Ophthalmia, neonat.	3	Sprain	23
Optic nerve, atrophy of ..	5	Stomatitis	6
Orchitis	9	Strab. conv.	4
Otalgia	2	Stricture, urethral	4
Otitis	3	Sudamina	1
Ovary, neuralgia of	5	Swelling of cheek	1
Ozæna	1	Synovitis	3
Panophthalmitis	3	Synovial cyst	1
Paralysis	4	Syphilis	139
diphtheritic	1	cong.	32
facial	1	Tabes mesenterica	1
partial	2	Talipes equino varus	1
reflex	7	Tænia	1
Paresis, ext. rect. of eye ..	4	Tinea	3
Paraphymosis	1	circin	2
Paraplegia	2	favosa	1
Parotitis	8	Tonsillitis	67
Pediculi pubis	1	Tonsil, hypertrophy of	3
Pediculi	4	Trachoma	6
Pemphigus	5	Tumor	9
Periostitis	1	cystic	3
Pharyngitis	133	gummatous	1
follic.	13	sebaceous	1
syphic.	2	Tuberculosis	20
Phthisis	120	Tumor of eyelid, sebaceous ..	2
incip.	10	inner canthus of eye	1
laryngeal	3	Ulcer	10
Pinguecula	1	of breast	3
enlarged	1	on leg	19
Pleuritis	5	on lip	1
Pleuro-pneumonia	1	on foot	1
Pluridynia	38	varicose	2
Pneumonia	5	chronic	1
Polypoid growth of eyelid ..	1	Ulceration of gums	1
Pott's disease	1	Urine, incontinence of	10
Perineum, laceration of	1	Urticaria	24
Presbyopia	2	Uterus, antifixion	2
Prepuce, adherent	2	antiversion	26
Prolapsus ani	2	areola hyper	34
iridis	2	atrophy of	2
vagine	3	cervix, elongation of	1
Prostate gland, hypertrophy of	2	cervix, laceration of	1
Prolapsus recti	1	fibrous tumor of	1
Prurigo	4	lateroversion	6
Pruritus	1	polypus of	1
vulvæ	1	proclidentia	1
Psoriasis	4	prolapsus	24
vesicolor	1	retroflexion	4
Pyrosis	2	retroversion	36
Pityriasis	4	Vaginitis	1
Pterygium	1	Varicella	7
Pupil, closure of, from iritis	1	Varicocele	1
Purpura	1	Varix	4
Rachitis	12	Vertigo	1
Retina, detachment of	1	Veruccæ	5
hemorrhage into	2	Vesical catarrh	1
Retinitis pigmentosa	1	irritability	26
Rheumatism	216	Vit. humor, opacity of	2
acute articular	1	Vomitus	1
muscular	4	Vulvitis	7
Rubeola	4	Whitlow	8
Scabies	4	Wound, contused	3
Scarlatina	1	gunshot	5
Sciatica	2	incised	13
Scorbutus	2	laceration	17
Scotoma	2	poisoned	2
Scrofulosis	49	punctured	6
Senile cough	1	Total	5,249
Shoulder joint, infl. of	1		

Number treated at Central Free Dispensary	5,249
Failed to report	229
Failed to return	4
No diagnosis	9
Sent to Children's Hospital	1
Referred to ward physicians	5
Refused treatment	41
Refused to be treated	4

Total	5,575
Males, white	590
Females, white	897
Children, males, white	198
Children, females, white	254
	1,939
Males, colored	828
Females, colored	1,946
Children, males, colored	411
Children, females, colored	451
	3,636

Total	5,575
The following patients are included in the above statement:	
Number treated as in-patients	13
Total number of days remaining in house	75
Americans	4,943
Foreigners	632
Total	5,575

Number of obstetrical cases	1
Number of prescriptions compounded	18,952

SURGICAL OPERATIONS.

Operations.	Number treated.	Operations.	Number treated.
Abscess, incision	5	Entropion, removed hair bulbs	1
cervical, incision	4	Epiphora, canal slit up	1
eyelid, incision	1	Fistula in ano, incision	1
scalp, incision	1	Foreign body in bladder, removal	1
scrofulous, incision	2	Foreign body in cornea, removal	3
submental, incision	2	Fracture of clavicle, adjust	1
pecos, incision	1	Hæmatocele, aspiration	1
Aderitis scrof. (incision, tube inserted and carbolic dressing)	1	Hæmorrhoids, operation for rad. cure	1
Amputation of finger	1	Hordeolum, incision	1
Ankyloglossia, incision	6	Hydrocele, evacuated	4
Ankylosis, elbow joint (adhesions broken)	1	Hydrocele, operation for radical cure	2
Anthrax, incision	2	Hypertrophied nails, removal	1
Arthritis, elbow joint (tube inserted and carbolic dressing)	1	Inflammation of joint, incision	1
Acites (tapped)	1	Iridectomy	4
Astresia vaginæ (adhesions broken)	4	Jury-mast applied	1
Babe, incision	1	Keloid, excision	2
Calculus vesical, dilation of urethra	6	Leucoma cornea, tattooed	4
Caruncle urethra, excision	1	Lipoma, excision	1
Cataract, extraction	2	Nævus, removed	1
Cataract, secondary, capsular, division by needle	3	Onychia, opened	1
Cellulitis, orbital, incision	1	Polypoid growth of eyelid, excision	1
Dilation, excision	12	Polypus uteri, removed	1
Dilation, opened	1	Prepuce, adherent, adhesions broken	9
Clavix from burn, cicatrix dissected out	1	Prolapsus Iridis, excision of iris	1
Cremation	15	Pterygium, excision	1
Contracted thumb, nail removed	1	Puncta, closure of, slit up	1
Cornea, paracentesis	1	Sinus corona penis, incision	1
Curvature of spine, angular, jacket applied	7	Staphyloma cornea, excision	1
Curvature of spine, lateral, jacket applied	4	Strabismus converg., strabotomy	7
Cyst of eyelid, evacuated	5	Stricture nasal duct, canal slit up	3
Dacryocystitis, division of canaliculi	1	Stricture urethra, dilatation	1
Dislocation of humerus, reduction	1	Talipes, equino varus, tenotomy	1
Entropion, plastic operation	1	Tumor, fibroid, excision	8
Eucleation of eye	1	Tumor, sebaceous, excision	1
		Ulcer of cornea, serpiginous, Samisch's operation	1
		Whitlow, incision	4
		Wound, gunshot, shot removed	1
		Total	171

Report of the treasurer.

RECEIPTS.

Balance on hand April 1, 1880		\$331 90
Received from District Commissioners	\$2,050 00	
Interest on United States bond	20 00	
Subscriptions	223 00	
	<hr/>	2,293 00
Total		2,624 90

EXPENSES.

Rent	\$300 00	
Druggist's salary	330 00	
Janitrix	115 00	
Drugs	1,238 06	
Stationery	11 00	
Fuel	55 43	
Printing	53 85	
Repairs	42 59	
Instruments, &c	42 79	
Furniture	20 49	
Provisions, &c	28 91	
Labor	10 00	
Miscellaneous	1 60	
	<hr/>	2,249 72
Cash balance on hand April 1, 1881		375 18

D. W. MIDDLETON,
Treasurer.

U.—ESTIMATES FOR THE POLICE COURT.

WASHINGTON, D. C., *September 28, 1881.*

GENTLEMEN: I have the honor herewith to submit the following estimate of expenses for the police court for the year ending June 30, 1883:

For salaries of—

Judge	\$3,000	
Clerks	2,000	
Deputy clerk	1,000	
2 bailiffs, at \$3 per day	1,878	
Messenger	900	
Janitor	540	
Van driver	540	
	<hr/>	\$9,858 00
For pay of justice during absence or sickness of judge		600 00
For other expenses, including fuel, gas, stationery, blanks, books, repairs, furniture, ice, witness fees, and miscellaneous items		2,500 00
For United States marshal's fees		1,400 00
		<hr/>
		14,358 00

Very respectfully, your obedient servant,

WM. B. SNELL,
Judge Police Court District of Columbia.

Hon. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

V.—REPORT OF COMMITTEE ON THE POOR FUND.

WASHINGTON, D. C., *June 25, 1881.*

GENTLEMEN: The Commissioners of the District of Columbia, to whom was entrusted the disbursement of the funds collected for the relief of the poor, under a resolution passed at the Willard Hall meeting in January last, have notified the undersigned that their accounts of receipts and expenditures are ready for examination, and have requested the appointment of a committee of citizens for that purpose.

You have been selected as gentlemen who it is believed will be willing to give a part of your time to the public to perform this service.

We hope you will be able to make this requisite examination, and report the result in such form as may be published in the newspapers.

We are, gentlemen, with much respect, your obedient servants,

A. B. HAGNER,
Chairman.

JNO. A. BAKER,

Secretary.

Messrs. REGINALD FENDALL,

F. B. McGUIRE, and

LEWIS J. DAVIS.

Hon. A. B. HAGNER, *Chairman,*

JOHN A. BAKER, Esq., *Secretary:*

GENTLEMEN: The committee appointed by you to audit the accounts of the Commissioners of the District of Columbia, in respect to the collection and distribution of the contributions for the relief of the poor and suffering of the District of Columbia of last winter, respectfully report that they have examined the statement and vouchers submitted by the Commissioners through their agent, the Chief of Police, and find from the same that the sum of \$11,751.33 was received, and that the sum of \$11,751.83, or fifty cents in excess of receipts, was expended in a most efficient and satisfactory manner. They also find that in addition to the cash receipts a considerable quantity of supplies in the form of food, fuel, clothing, and bedding was contributed and distributed.

As this fund and the other contributions were the spontaneous expression of sympathy with, and desire to relieve, the sufferings of the poor unprepared for the trials of a severe winter, and as good was accomplished to an extent disproportionate to the facilities afforded those managing the contributions, upwards of 6,000 families having been relieved, we deem it a matter of some interest to refer to the admirable method adopted by the Commissioners in distributing relief over a large field, and to the relative demands made by the necessitous in the future.

Major Brock, the Chief of Police, directed his men to examine into the wants of the poor in their respective precincts, and upon reporting the necessities of the individual an order, signed by the lieutenant of the precinct, was given for whatever was most needed in the special case, which order was supplied by the merchant to whom it was presented, and returned by him to the lieutenant who issued it; he tested it, and it was then paid by the Chief of Police.

By this method every dollar was dedicated to its mission and the strictest integrity insured in carrying out the trust imposed upon the Commissioners.

166 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

The relative necessities of the poor last winter are shown by the following tabular statement of the expenditure of the fund, and may furnish a future guide for the charitable who may make contributions of articles instead of money.

The amount of cash contributed was \$11,751 33
Which was distributed thus:

Groceries	\$6,087 06
Fuel	5,266 46
Boots and shoes	142 60
Cash, in small amounts	128 97
Cartage of coke	80 00
Dry-goods and bedding.....	46 74

Overpaid	11,751 83	50
		11,751 83

In conclusion, we take pleasure in congratulating the charitable upon the suffering they relieved by their generous and spontaneous response, and we beg leave to commend Major W. G. Brock, the Chief of Police, for the admirable method he adopted, and which, with the aid of his officers and men, he so efficiently executed.

Very respectfully, your obedient servants,

REGINALD FENDALL,
F. B. MCGUIRE,
LEWIS J. DAVIS,

Committee.

W.—REPORT OF THE GOVERNMENT HOSPITAL FOR THE INSANE.

GOVERNMENT HOSPITAL FOR THE INSANE,
Washington, D. C., October 1, 1881.

GENTLEMEN: In accordance with the act of Congress approved March 3, 1881, entitled "An act making appropriations to provide for the expenses of the government of the District of Columbia for the fiscal year ending June 30, 1882, and for other purposes," I have the honor to transmit herewith a copy of the Twenty-sixth Annual Report of the Board of Visitors of this institution, addressed to the honorable Secretary of the Interior, accompanied by a detailed statement of the receipts and expenditures of the Government Hospital for the Insane for the fiscal year ending June 30, 1881.

I am, gentlemen, very respectfully, your obedient servant,
W. W. GODDING,
Superintendent.

Hon. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

NON-RESIDENT OFFICERS OF THE HOSPITAL, JUNE 30, 1881.

VISITORS.

JOSEPH K. BARNES, M. D., U. S. A.,
President of the Board.
JOSEPH M. TONER, M. D.
JAMES C. WELLING, LL. D.
WILLIAM GRIER, M. D., U. S. N.

CHARLES WORTHINGTON, Esq.
MRS. A. M. GANGEWER.
" AMELIA J. ROWLAND.
ADM. JOHN J. ALMY, U. S. N.
REV. C. HERBERT RICHARDSON.

EXECUTIVE COMMITTEE OF THE BOARD.

MEMBERS. BARNES, TONER, AND GRIER.

CHAPLAINS.

REV. JOHN CHESTER, D. D.
A. FLORIDUS STEELE.
J. G. BUTLER, D. D.

REV. J. W. PARKER, D. D.
" S. F. RYAN.
" J. S. DEALE, D. D.

RESIDENT MEDICAL OFFICERS OF THE HOSPITAL.

W. W. GODDING, M. D., *Superintendent and ex-officio Secretary of the Board of Visitors.*
SAMUEL B. LYON, M. D., *Chief Clerk and Visiting Physician to the Relief.*
A. H. WITMER, M. D., *First Assistant Physician.*
MAURICE J. STACK, M. D., *Second Assistant Physician.*
GEORGE W. FOSTER, M. D., *Third Assistant Physician.*
A. C. PATTERSON, M. D., *Night Medical Inspector.*

REPORT OF THE BOARD OF VISITORS.

GOVERNMENT HOSPITAL FOR THE INSANE,
Near Washington, D. C., October 1, 1881.

SIR: In accordance with the law establishing this hospital, the Board of Visitors have the honor to submit their twenty-sixth annual report.

The following tables give a synopsis of the movements of the population and operations of the hospital during the year ending June 30, 1881:

Summary.

	Males.	Females.	Totals.
Remaining June 30, 1880	691	206	897
Admitted during the year ending June 30, 1881	161	62	223
Whole number under treatment	852	268	1,120
Recovered	62	10	72
Improved	27	9	36
Unimproved		6	6
Died	63	18	81
Total discharged and died	152	43	195
Remaining June 30, 1881	700	225	925

Admissions and discharges.

	Males.	Females.	Totals.
REMAINING JUNE 30, 1880.			
Army..... { White ... 453	464	3	467
{ Colored.. 11			
Navy..... { White ... 42	43	3	43
{ Colored.. 1			
Marine Hospital service..... { White ... 7	8		8
{ Colored.. 1			
Civil life..... { White ... 132	176	146	379
{ Colored.. 44		57	
	691	206	897

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168 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA

Admissions and discharges—Continued.

		Males.		Females.		Totals.	
ADMITTED DURING THE YEAR 1880-'81.							
Army.....	{ White ... Colored..	58 2	60	1	1	61	
Navy	{ White ... Colored..	10 1	11			11	
Marine Hospital Service	{ White ... Colored..	4 3	7			7	
Civil life	{ White ... Colored..	63 20	83	43 18	61	144	223
UNDER TREATMENT DURING THE YEAR.							
Army.....	{ White ... Colored..	511 13	524	4	4	528	
Navy	{ White ... Colored..	52 2	54			54	
Marine Hospital Service	{ White ... Colored..	11 4	15			15	
Civil life	{ White ... Colored..	195 64	259	189 75	264	523	1,120
DISCHARGED DURING THE YEAR—Recovered.							
Army.....	{ White ... Colored..	25 2	27	1	1	28	
Navy	{ White ... Colored..	7	7			7	
Marine Hospital Service	{ White ... Colored..	..... 1	1			1	
Civil life	{ White ... Colored..	17 10	27	5 4	9	36	72
DISCHARGED DURING THE YEAR—Improved.							
Army.....	{ White ... Colored..	7 1	8			8	
Navy	{ White ... Colored..	..... .....				
Marine Hospital Service	{ White ... Colored..	2	2			2	
Civil life	{ White ... Colored..	16 1	17	6 3	9	26	36
DISCHARGED DURING THE YEAR—Unimproved.							
Army.....	{ White ... Colored..	..... .....				
Navy	{ White ... Colored..	..... .....				
Marine Hospital Service	{ White ... Colored..	..... .....				
Civil life	{ White ... Colored..	..... .....		5 1	6		6
DECEASED DURING THE YEAR.							
Army.....	{ White ... Colored..	44	44			44	
Navy	{ White ... Colored..	3	3			3	
Marine Hospital Service	{ White ... Colored..	1 1	2			2	
Civil life	{ White ... Colored..	9 5	14	12 6	18	32	8

Admissions and discharges—Continued.

		Males.		Females.		Totals.	
REMAINING JUNE 30, 1881.							
Army	{ White ...	435	445	3	3	448	
	{ Colored..	10		.....		
Navy	{ White ...	42	44			44	
	{ Colored..	2					
Marine Hospital Service.....	{ White ...	8	10			10	
	{ Colored..	2					
Civil life	{ White ...	153	201	161	222	423	925
	{ Colored..	48		61			
			700		225		

NOTE 1.—Of the 423 from civil life remaining at the end of the year 383 were indigent residents of the District of Columbia, 21 were indigent non-residents, and 2 were non-resident criminals.

NOTE 2.—There were 10 less persons than cases under treatment in the course of the year by reason of 8 readmissions and two transfers from "independent" to "indigent."

Monthly changes of population.

Date:	Admitted.			Discharged.						
	Male.	Female.	Total.	Male.	Female.	Total.	Died.			Total disch'd, including deaths.
							Male.	Female.	Total.	
July, 1880	15	4	19	13	3	16	4	1	5	21
August, 1880	13	5	18	5	5	10	3	0	3	13
September, 1880	9	6	15	9	2	11	6	3	9	20
October, 1880	12	6	18	15	1	16	6	4	10	26
November, 1880	11	3	14	6	1	7	6	0	6	13
December, 1880	11	4	15	2	2	4	4	3	6	10
January, 1881	10	5	15	6	2	8	7	1	8	16
February, 1881	17	6	23	1	1	2	4	2	6	8
March, 1881	11	7	18	5	0	5	4	1	5	10
April, 1881	12	2	14	13	0	13	10	2	12	25
May, 1881	18	5	23	7	3	10	7	2	9	19
June, 1881	22	9	31	7	5	12	2	0	2	14
	161	62	223	89	25	114	63	18	81	195

Physical condition of those who died.

Apoplexy	1	Old age	1
Apoplexy (epileptic).....	10	Organic disease of brain	18
Asphyxia (accidental).....	1	Organic disease of brain and spinal cord	3
Bright's disease	2	Osteo-sarcoma (of thigh).....	1
Burn (self-inflicted).....	1	Paresis	11
Cancer (of pancreas).....	1	Peritonitis, acute	1
Cardiac disease	4	Pernicious fever	1
Cirrhosis of liver, with cholesteræmia.	1	Phthisis pulmonalis.....	12
Diarrhoea	5	Pulmonary oedema	1
Erysipelas	1	Typo-malarial fever	1
Exhaustion of acute mania.....	1	Total	81
Exhaustion of chronic mania.....	1		
Fracture of neck of femur	1		
Intussusception (intestinal).....	1		

Duration of the mental disease of those who died.

Less than three months.....	4	Ten years	2
Three to six months	3	Eleven years	1
Six months to one year	1	Twelve years	4
One year	11	Thirteen years	4

170 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Duration of the mental disease of those who died—Continued.

Two years.....	15	Fourteen years.....	2
Three years.....	8	Fifteen years.....	3
Four years.....	1	Sixteen years.....	1
Five years.....	4	Seventeen years.....	3
Six years.....	6	Twenty years.....	1
Seven years.....	3		
Eight years.....	2	Total.....	81
Nine years.....	2		

Duration of disease on admission.

		Males.		Females.		Totals.	
LESS THAN SIX MONTHS.							
Army.....	{ White	23	25	1	1	26	
	{ Colored	2					
Navy	{ White	7	7			7	
	{ Colored						
Marine Hospital Service.....	{ White	1	3			3	
	{ Colored	2					
Civil life	{ White	29	42	11	17	59	
	{ Colored	13		6			
			77		18	95	
LESS THAN ONE YEAR.							
Army.....	{ White	11	11			11	
	{ Colored						
Navy	{ White	1	1			1	
	{ Colored						
Marine Hospital Service	{ White	2	2			2	
	{ Colored						
Civil life	{ White	2	2	4	7	9	
	{ Colored			3			
			16		7	23	
ONE TO TWO YEARS.							
Army.....	{ White	17	17			17	
	{ Colored						
Navy	{ White	3	3			3	
	{ Colored						
Marine Hospital Service.....	{ White	1	2			2	
	{ Colored	1					
Civil life.....	{ White	17	21	8	11	32	
	{ Colored	4		3			
			43		11	54	
OVER TWO YEARS.							
Army.....	{ White	1	1			1	
	{ Colored						
Navy	{ White						
	{ Colored						
Marine Hospital Service	{ White						
	{ Colored						
Civil life	{ White	5	5	5	8	13	
	{ Colored			3			
			6		8	14	
OVER THREE YEARS.							
Army.....	{ White	1	1			1	
	{ Colored						
Navy	{ White						
	{ Colored						
Marine Hospital Service	{ White						
	{ Colored						
Civil life	{ White	3	4			4	
	{ Colored	1					
			5				

Duration of disease on admission—Continued.

		Males.		Females.		Total.	
OVER FOUR YEARS.							
Army.....	{ White						
	{ Colored ..						
Navy.....	{ White						
	{ Colored ..						
Marine Hospital Service	{ White						
	{ Colored ..						
Civil life	{ White			6			
	{ Colored ..			2			
					8	8	8
FIVE TO TEN YEARS.							
Army.....	{ White	2					
	{ Colored ..						
			2			2	
Navy.....	{ White						
	{ Colored ..						
Marine Hospital Service	{ White						
	{ Colored ..						
Civil life	{ White	4		7			
	{ Colored ..	2		1			
			6		8	14	16
TEN TO TWENTY YEARS.							
Army.....	{ White	3					
	{ Colored ..						
			3			3	
Navy.....	{ White						
	{ Colored ..						
Marine Hospital Service	{ White						
	{ Colored ..						
Civil life	{ White			2			
	{ Colored ..						
			3		2	2	5
OVER TWENTY YEARS.							
Army.....	{ White						
	{ Colored ..						
Navy.....	{ White						
	{ Colored ..						
Marine Hospital Service	{ White						
	{ Colored ..						
Civil life	{ White	2					
	{ Colored ..	1					
			3				
				3			3
							223

Table showing the nativity, as far as could be ascertained, of the 5,163 cases treated.

NATIVE BORN.		FOREIGN BORN.	
District of Columbia.....	560	Ireland.....	1,071
New York.....	385	Germany.....	715
Maryland.....	364	England.....	127
Virginia.....	367	France.....	51
Pennsylvania.....	274	Canada.....	44
Ohio.....	137	Scotland.....	38
Massachusetts.....	121	Switzerland.....	15
Maine.....	58	Italy.....	22
Illinois.....	49	Denmark.....	14
Connecticut.....	44	Norway.....	10
New Hampshire.....	49	Sweden.....	12

172 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Table showing the nativity, &c.—Continued.

NATIVE BORN.		FOREIGN BORN.	
Indiana	40	Poland	11
Kentucky	37	Russia	6
Michigan	30	Austria	5
New Jersey	36	Nova Scotia	9
Tennessee	25	Spain	4
Wisconsin	20	Holland	6
Vermont	24	Wales	4
Missouri	21	Portugal	3
Rhode Island	15	Hungary	4
Delaware	14	Mexico	3
North Carolina	18	Saxony	4
Alabama	7	Malta	3
South Carolina	9	Cyprus	1
Iowa	4	Belgium	3
Georgia	9	Buenos Ayres	1
Mississippi	9	Costa Rica	1
Louisiana	5	Bavaria	2
West Virginia	6	Sicily	1
Kansas	2	British Columbia	1
Florida	2	British Possessions	1
Texas	4	East Indies (British)	2
California	3	West Indies (British)	4
Choctaw Nation	2	West India, Hayti	1
Colorado	1	New Brunswick	1
Arkansas	1	Cuba	2
Total	2,752	Sandwich Islands	1
		China	1
		Coast of Africa	2
		Total	2,206
Native born			2,752
Foreign born			2,206
Unknown			205
Total			5,163

FORM OF DISEASE IN THOSE ADMITTED.

	Total last year.	Admitted during year.	Total.		Total last year.	Admitted during year.	Total.
Mania, acute	1,828	50	1,878	Kleptomania	3		3
Mania, chronic	750	57	816	Nymphomania	3		3
Melancholia	578	60	638	Imbecility	39	4	43
Dementia	1,263	30	1,293	Opium eaters	11		11
Dementia, senile	54	2	56	Not insane	4		4
Paresis	55	10	65	Total	4,940	223	5,163
Dipsomania	341	10	351				
Typhomania (Bell's dis- ease)	2		2				

COMPLICATIONS OF THOSE ADMITTED.

Epilepsy	268	17	285	Periodicity	186	9	195
Apoplexy	2		2	Puerperal state	39	1	40
Paralysis	108	14	122	Catalepsy	7	1	8
Suicidal disposition	126	13	139	Nostalgia	31	1	32
Homicidal disposition	45	5	50	Post febrile condition	41	3	44

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 173

As far as could be ascertained, the volunteers of the Army and Navy under treatment during the year ending June 30, 1881, entered the service from the following States :

	Army.	Navy.	Total.		Army.	Navy.	Total.
New York.....	48	.....	48	Maine.....	7	.....	7
Pennsylvania.....	28	.....	28	Nebraska.....	2	.....	2
Indiana.....	20	.....	20	Delaware.....	1	.....	1
Michigan.....	22	.....	22	Minnesota.....	1	.....	1
Illinois.....	11	.....	11	Iowa.....	3	.....	3
Wisconsin.....	16	.....	16	North Carolina.....	1	.....	1
Massachusetts.....	12	.....	12	California.....	1	.....	1
Connecticut.....	4	.....	4	New Mexico.....	1	.....	1
New Hampshire.....	8	.....	8	Kentucky.....	1	.....	1
Vermont.....	5	.....	5	West Virginia.....	2	.....	2
Maryland.....	1	.....	1	Unknown.....	5	1	6
New Jersey.....	7	.....	7				
	18	.....	18	Total.....	230	1	231
	5	.....	5				

Tabular statement of the time of life at which the 5,163 persons treated since the opening of the Institution became insane.

Under 10 years.....	83
Between 10 and 15 years.....	55
15 and 20 years.....	323
20 and 25 years.....	943
25 and 30 years.....	1,038
30 and 35 years.....	909
35 and 40 years.....	600
40 and 45 years.....	397
45 and 50 years.....	273
50 and 60 years.....	254
60 and 70 years.....	143
70 and 80 years.....	50
80 and 90 years.....	7
Unknown.....	84
Not insane.....	4
Total.....	5,163

Private patients.

	Total.
There were at the beginning of the year.....	6 males, 9 females.. 15
Received during the year.....	7 males, 4 females.. 11
Whole number under treatment.....	13 males, 13 females.. 26
Discharged during the year.....	4 males, 5 females.. 9
Remaining at the end of the year.....	9 males, 8 females.. 17

Table showing the history of the annual admissions since the opening of the hospital, with the discharges and deaths, and the number of each year remaining June 30, 1881.

Years.	Admitted.			Of each year's discharged and died in 1881.								Total discharged and died of each year's admission.								Remaining of each year's admissions, June 30, 1881.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	New cases.		Released cases.	Recovered.		Unimproved.		Died.	Recovered.		Improved.		Unimproved.		Died.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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Years.	Admitted.				Recovered.				Discharged.				Died.	Total.	Percentage of deaths on the numbers under treatment.							
	Total.		Male.		Total.		Male.		Total.		Male.											
	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.												
1855	26	37	63	3	3	3	3	3	3	3	3	3	8	26	34	60	19	35	70	100	100	100
1856	36	51	87	5	5	10	15	54	69	123	24	39	63	103	106	106	106	106	106	106	106	106
1857	25	27	52	4	4	8	12	39	43	82	19	28	47	66	69	69	69	69	69	69	69	69
1858	29	14	43	13	13	26	39	58	50	108	17	17	34	51	51	51	51	51	51	51	51	51
1859	47	18	65	16	16	32	48	84	54	138	57	57	114	171	171	171	171	171	171	171	171	171
1860	68	24	92	26	26	52	78	104	61	165	72	72	144	216	216	216	216	216	216	216	216	216
1861	64	31	95	42	42	84	126	108	61	169	72	72	144	216	216	216	216	216	216	216	216	216
1862	174	12	186	94	94	188	282	268	65	333	212	212	424	636	636	636	636	636	636	636	636	636
1863	330	25	355	187	187	374	561	504	76	580	328	328	656	984	984	984	984	984	984	984	984	984
1864	494	25	519	282	282	564	846	768	86	854	474	474	948	1422	1422	1422	1422	1422	1422	1422	1422	1422
1865	478	36	514	315	315	630	945	858	94	952	514	514	1028	1542	1542	1542	1542	1542	1542	1542	1542	1542
1866	104	22	126	104	104	208	312	208	96	304	192	192	384	576	576	576	576	576	576	576	576	576
1867	88	21	109	45	45	90	135	120	102	222	102	102	204	306	306	306	306	306	306	306	306	306
1868	120	33	153	49	49	98	147	133	108	241	108	108	216	324	324	324	324	324	324	324	324	324
1869	133	36	169	59	59	118	177	158	123	281	123	123	246	369	369	369	369	369	369	369	369	369
1870	146	36	182	62	62	124	186	164	134	298	134	134	268	402	402	402	402	402	402	402	402	402
1871	161	34	195	50	50	100	150	136	123	259	123	123	246	369	369	369	369	369	369	369	369	369
1872	142	44	186	43	43	86	129	114	124	238	124	124	248	372	372	372	372	372	372	372	372	372
1873	153	51	204	49	49	98	147	132	137	269	137	137	274	411	411	411	411	411	411	411	411	411
1874	192	58	250	67	67	134	201	184	156	340	156	156	312	468	468	468	468	468	468	468	468	468
1875	179	51	230	66	66	132	198	177	168	345	168	168	336	504	504	504	504	504	504	504	504	504
1876	166	47	213	67	67	134	201	184	156	340	156	156	312	468	468	468	468	468	468	468	468	468
1877	147	51	198	66	66	132	198	177	168	345	168	168	336	504	504	504	504	504	504	504	504	504
1878	138	44	182	68	68	136	204	188	162	350	162	162	324	486	486	486	486	486	486	486	486	486
1879	169	53	222	68	68	136	204	188	162	350	162	162	324	486	486	486	486	486	486	486	486	486
1880	181	44	225	38	38	76	114	102	89	191	89	89	178	267	267	267	267	267	267	267	267	267
1881	161	62	223	62	62	124	186	164	134	298	134	134	268	402	402	402	402	402	402	402	402	402
1882	181	62	2																			
Total 27 yrs..	4,231	937	5,168	1,906	261	2,167	561	1,605	726	1,211	49	170	943	2,221	1,175							

The number of admissions, which was 223, is almost identical with that of the two previous years, but the number remaining at the close of the year, 925, as well as the number under treatment during the year, 1,120, exceeds that of any previous report. As the hospital becomes a permanent home for the most of those who do not recover, it is to be expected that the number of inmates will slowly increase. The daily average number under treatment was 896. Rather more than one-third of the discharges, including deaths, have been recoveries, and the deaths, 81 in number, have been a little more than 7 per cent. of the whole number treated.

Throughout the year the hospital has enjoyed an immunity from epidemic disease or extensive disaster, which while it is not different from its usual record is none the less a subject for congratulation and thankfulness. In a community of nearly 1,000 insane persons the possibilities of accident or outbreak are many and are a source of daily anxiety to the officers in charge; indeed, when we take into account the crowded condition of the house, it is a matter of surprise that so little really serious trouble has hitherto occurred in our hospital.

The recently-erected buildings for special classes have afforded great relief to our overcrowded wards, and another year's test of their practical working has only confirmed the opinion that in some such provision for the quiet classes will be found a satisfactory solution to the great social problem of the care of the chronic insane. Startling events of almost daily occurrence show that it is unsafe to have them at large in the community; humanity protests that they shall not be left neglected in almshouses; what is wanted for them is care in comfortable but inexpensive homes connected with our present curative establishments for the insane.

So many requests have been received for information about the new buildings from those interested in the erection of similar structures elsewhere, that we have inserted in this report the ground plan and elevation of the relief building, so-called, which we think will convey the information desired. This is a building, with outer and interior walls of brick, constructed and furnished at a time when both labor and material were exceptionally low, and the whole expenditure did not exceed \$250 per patient for the number now occupying it. Allowing that this would be an unsafe figure on which to base an estimate at present prices as it certainly would, still it is demonstrable that accommodations which are all that are needed for the comfortable care of the mild cases of insanity can be provided at an expense for furnished buildings of less than \$500 per patient.

When it shall become the settled policy of the States to care for all their insane, taking them out of the town and county almshouses, placing them in homes connected with the existing hospitals, and giving them workshops and tillage lands, it will be a greater advance in their treatment than any that has been made since the earnest philanthrop of Miss Dix first called attention to the condition of this unfortunate class and created so many of our present hospitals; which was a noble charity and meant for all, but practically it has been found that the liberal and expensive provision for the cure of insanity, admirable as necessary as it is for a part, has proved so great a tax that no State has thus far been willing to provide such elaborate asylums for the whole.

The following is the table of farm and garden products, with the estimated value:

Asparagus, 1,990 bunches, at 6 cents	\$119
Apples, 76 bushels, at 75 cents	57
Apricots, $\frac{1}{2}$ bushel, at \$5	2

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Beans (lima), 219 bushels, at \$1.....	\$219 00
Beans (string), 80½ bushels, at 75 cents.....	60 37
Beef (fresh), 3,336 pounds, at 7½ cents.....	250 20
Berries, 6-3 bushels, at 50 cents.....	341 50
Bets, 1,050 bunches, at 4 cents.....	42 00
Bets (greens), 71 barrels, at \$1.....	71 00
Blackberries, 275 quarts, at 10 cents.....	27 50
Cabbages, 12,681 heads, at 8 cents.....	1,014 40
Cabbages, 74 barrels, at \$1.....	74 00
Celery, 2,328 bunches, at 3 cents.....	69 84
Celery, 7,991 heads, at 4 cents.....	319 64
Chickens, 21½ dozens, at \$4.....	87 33
Chickens, 2,654, at 1 cent.....	26 54
Cherries, 54 bushels, at \$3.....	162 00
Currants, 170 quarts, at 15 cents.....	25 50
Corn (green), 970½ dozen ears, at 12 cents.....	117 47
Cantaloupes, 1,228, at 5 cents.....	61 40
Ducks, 10½ dozens, at \$5.....	50 42
Eggs, 2,957½ dozens, at 16 cents.....	473 25
Egg plants, 2,973, at 3 cents.....	89 19
Eggs, 109 quarts, at 20 cents.....	21 80
Geese, 26, at \$1.....	26 00
Gooseberries, 470 quarts, at 15 cents.....	70 50
Grapes, 16,800 pounds, at 5 cents.....	840 00
Honey, 15 pounds, at 12 cents.....	1 80
Kale, 190 barrels, at \$1.50.....	285 00
Lettuce, 8,632 heads, at 2 cents.....	172 64
Leeks, 29,193 heads, at 1 cent.....	291 93
Milk, 43,753 gallons, at 25 cents.....	10,938 25
Onions, 53 bushels, at \$1.....	53 00
Onions, 2,474 bunches, at 5 cents.....	123 70
Onions (sets), 4 bushels, at \$8.....	32 00
Oyster plants, 1,785 bunches, at 6 cents.....	107 10
Parsley, 4,991 bunches, at 3 cents.....	149 73
Parsnips, 305 bushels, at \$1.....	305 00
Peppers, 2 bushels, at \$1.....	2 00
Pease, 189 bushels, at \$1.....	189 00
Pears, 20½ bushels, at \$3.....	60 75
Pork, 22,376 pounds, at 7 cents.....	1,566 32
Pigeons, 65, at 25 cents.....	16 25
Potatoes (Irish), 165½ bushels, at 75 cents.....	124 12
Potatoes (sweet), 672 bushels, at 50 cents.....	336 00
Pumpkins, 50 cart-loads, at \$2.....	100 00
Peaches, 62½ bushels, at \$1.25.....	77 81
Quinces, 64 bushels, at \$3.....	192 00
Raddishes, 1,023 bunches, at 3 cents.....	30 69
Railish (horse), 522 pounds, at 8 cents.....	41 76
Rubarb, 653 pounds, at 3 cents.....	19 59
Raspberries, 144 quarts, at 20 cents.....	28 80
Strawberries, 3,880 quarts, at 12½ cents.....	485 00
Spinach, 44 barrels, at \$1.....	44 00
Squash (summer), 3,784, at 2 cents.....	75 68
Squash (turban), 389 pounds, at 3 cents.....	11 67
Squash (turban), 41 barrels, at \$3.50.....	143 50
Turkeys, 2, at \$1.50.....	3 00
Turnips, 223 bushels, at 50 cents.....	111 50
Tomatoes, 1,051½ bushels, at 50 cents.....	525 87
Turkey, 286 pounds, at 8 cents.....	22 88
Watermelons, 22, at 6 cents.....	1 32
Total.....	21,389 49

The following are the products that were consumed on the farm, and consequently are not a part of the profits:

Corn (shelled), 400 bushels, at 60 cents.....	\$240 00
Corn (fodder, green), 12 acres, at \$35.....	420 00
Corn (fodder, dry), 25 tons, at \$15.....	375 00
Grass pasturage.....	800 00
Grass (green), 8 acres, at \$30.....	240 00
Hay, 250 tons, at \$20.....	5,000 00

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Mangel-wurzel, 112 tons, at \$15.....	\$1,690 00
Rye (green), 5 acres, at \$30.....	150 00
Kutabaga, 173 bushels, at 45 cents.....	77 85
Straw (rye), 15 tons, at \$15.....	225 00
Total.....	9,207 85

The farm is now moderately remunerative and affords employment to many of our inmates. On the whole its production is satisfactory. The forage crops are large and are consumed on the place. The fruit crop is increasing and adds a pleasant variety to the table in its season. The vegetable garden can usually be relied on throughout most of the year for the same purpose. The amount of milk produced last year was 43,753 gallons, giving a daily consumption of about 120 gallons. With proper shelter for the herd it is probable that the production can be carried up to 150 gallons daily, which will afford a liberal supply of this best nutriment for the aged and infirm who constitute so large a proportion of the insane. What we consider the advantages of the farm, in addition to its products, are, that it offers varied occupation not otherwise so satisfactorily afforded, gives space for walks and recreation to a large proportion of the inmates, and is the most salubrious of all possible surroundings for so extensive a pile of buildings. In the torrid heat of the summers of this latitude it is restful and invigorating to come from the stifling pavements of the city upon our green lawns and feel the wind blowing from the river. The pleasing variety of country fields and woods is a relief to the necessarily monotonous life of the insane, and, while such ample grounds show a most liberal provision of the government for her insane, they are none too large, nor will the variety afforded by a few hundred acres seem too great to those who must perforce find in them the limit of their world.

The estimates of appropriations for the fiscal year ending June 30, 1883, are as follows:

1. For the support, clothing, and treatment in the Government Hospital for the Insane, of the insane of the Army, Navy, Marine Corps, and the Revenue Cutter Service, and of all persons who have become insane since their entry into the military or naval service of the United States, and who are indigent, and of the indigent insane of the District of Columbia, \$202,500.

It is estimated that during the fiscal year ending June 30, 1883, the hospital will be called upon to provide for an average number of not less than 900 of the indigent insane belonging to the above classes, and that the cost per patient will be \$225; this includes all the expenditures of the hospital except those for special repairs and improvements. As the number of patients under treatment at the close of the last fiscal year was 925, and is still increasing, it is possible that the above will prove an underestimate in numbers and consequently in amount.

It is asked that the provision which has been made for some years be continued; that not exceeding \$1,000 of the appropriation for support may be expended to defray the expenses of the removal of patients to their friends; also, that the permission which is now granted to the Volunteer Soldiers' Homes be extended to the Government Hospital for the Insane, viz, to dispose of hospital products and articles manufactured by the inmates for the benefit of the hospital.

2. For general repairs and improvements, \$10,000.

This annual expenditure is necessary to prevent deterioration in the hospital, and is true economy in the proper care of the buildings and grounds; it is the amount usually estimated, and is the same as the appropriation for the current year.

3. For special improvements, viz, a supply of pure water, increased accommodations for hay, stock, and farm implements; a detached kitchen and cooking apparatus, with scullery; fire-walls between sections; a mortuary building; in all, \$38,500.

No special improvement has been asked in this estimate that has not been considered essential to the continued welfare of the hospital, and certainly there is none more so than a full supply of pure water for all purposes of the inmates. It is a cruel wrong to longer delay giving the same the use of the water from the Upper Potomac, which the United States Government has so munificently supplied to the city of Washington and the departments here. It is not a difficult work. Our present arrangements for pumping and water service are ample; it only needs suitable depositing reservoirs with a 6-inch iron pipe laid for about three-fourths of a mile across the bed of the river, most of the distance in shallow water, and it is believed that the sum asked will be sufficient to complete the work. A little excellent water for drinking is obtained from springs near the hospital, but this is a scanty supply, best and liable at any time to be greatly diminished, if not entirely cut off, by the summer's drought. The water for all other uses is pumped from the Anacostia at a point where it ebbs and flows by the hospital grounds. This stream takes the wash of East and South Washington; flats have long been a favorite dumping-ground for the dredgings from the channel of the Potomac, and we believe it is endangering the health of our inmates to continue its use; every severe storm leaves it many days unfit for anything but a fertilizer. Surely the poisonous mud of this sluggish creek, with its annual increment of defilement, is unfit to be the water-supply for a great hospital of dependent sufferers who allowed no option in the selection of a home. That there may be no delay in the completion of this very necessary work, it is asked that \$5,000 of the appropriation for special improvements be made immediately available.

Another pressing want is room for the storage of hay and the proper care of the stock. More than 100 tons of hay is now standing in stacks exposed to the weather, simply because we have no room for it in the barn. A pigery was built last year, and with that exception no farm building has been added since 1874; meantime, the milk produced on the farm, every quart of which is needed for the proper sustenance of the great household, has increased from 15,925 gallons in 1875, to 43,753 gallons in 1881, the herd of milch cows being nearly doubled, with no additional provision for their shelter other than a few sheds, which afford but very indifferent winter protection. The thrifty farmer provides warm quarters for his stock and thereby reduces his expenditure for their food. It is economy for the hospital, whose dairy farm supplies so important an element of the daily food of its inmates, to take the best possible care of its neat cattle, and \$5,000 is asked for these very necessary farm buildings.

The hospital has quite outgrown its old culinary arrangements, and a new provision will have to be made. The present kitchen is in the basement of the center building, directly under the executive offices, which enjoy a more than tropic heat in summer in consequence; the odor of cooking is less localized and extends through the whole building. In the best modern hospitals the kitchen is placed either in the highest story of the building or in a detached structure, thus avoiding all discomfort to the wards from heat and odor. The arrangements of this hospital do not admit of locating the kitchen in the top of the house, and indeed, unless the ground rent is a serious item as in cities, it would seem to be

better in all cases, in view of the greater security from fire, to place it in a distinct building. Such detached building should be made fire-proof, of one story, with skylights and ventilators directly over the cooking apparatus, making the whole room light and airy. The scullery should be an adjoining room, having all convenient arrangements for the preparation of vegetables and washing of dishes. The kitchen itself should be specially fitted with all the necessary apparatus for the cooking of food on a large scale, as well as such approved appliances as may be needed for making special dishes for the sick. Much of the apparatus in our present kitchen is comparatively new and excellent, and it is thought that \$4,000 will enable us to erect the building and purchase all the additional apparatus which the increased accommodations have rendered necessary.

Several destructive fires have occurred in hospitals for the insane during the past year in different parts of the country; this has led us to make a careful re-examination of our own hospital for all sources of danger in this direction. In addition to the ample provisions in other respects, which have already been made, we recommend the construction of fire-proof walls of brick, with iron doors, between the different sections of the hospital building, so that should a fire unfortunately occur it could be confined to the section in which it originated. It will not be a difficult matter to arrange for such walls; some slight changes in a few rooms will be necessary, but these changes will be improvements rather than otherwise, and for the sum asked, \$3,500, it is thought that the whole work can be accomplished. Within walls where every year more than a thousand insane persons are provided for, no safeguard against so terrible a calamity as fire should be omitted.

So far as it is possible all the surroundings of the insane should be pleasant, and all depressing scenes and associations should be avoided. The want of a suitable mortuary building has long been felt, and \$1,000 is asked for this purpose. The fitness of things seems to demand a proper provision for the dead outside the wards of the living; no well-appointed hospital is without this.

4. For the erection of a distinct hospital building for the female insane, \$250,000; for expenditure in the fiscal year ending June 30, 1883, \$125,000.

The time has come when some new provision will have to be made for the female insane in this hospital. Accommodations for 150 women are now crowded with 230, and the number is steadily increasing. In making new arrangements it is very important that they should be the best known. The experience in Philadelphia, in New York, and in Michigan, has clearly established the decided advantage of providing for the care of the two sexes in distinct hospital buildings, having separate inclosures for each. Nowhere is the importance of such distinct provision for the female insane more clearly shown than at the Government Hospital for Insane. The male patients being in excess in point of numbers, the weaker party, as is usual in such cases, goes to the wall. In the matter of unrestricted liberty of the grounds, it is impossible to do justice to either sex so long as both share the same inclosures. All the space of the present buildings would only afford comfortable accommodations for the number of male patients now under treatment, if the rooms designed for day rooms and amusement rooms were no longer used as dormitories. With that change and a new building with all the modern improvements, built on a distinct site for the females, the United States could fairly claim to have made here a model provision for the indigent insane. The new building should be for 300 patients, and admit of

sions to provide for 100 additional, without marring the architectural proportions or the unity of design. Such a structure, of brick, fire-proof, complete in all its appointments, and embodying the best ideas of modern science in regard to the comfort and the cure of the insane can be completed for the sum named. The present steam, water, and gas supply, as well as the present bakery and laundry, would be available for the departments, and the whole would remain under one executive head. That there may be no delay in the erection of this very necessary building, the amount for expenditure in the fiscal year ending June 30, 1883, is asked immediately available.

Three citizens of Washington, each prominent in his sphere, who had for former years been members of the Board of Visitors, have passed away since the date of the last annual report. In view of the long and faithful service which each one of these gentlemen rendered to the hospital, it is deemed but proper that the resolutions of respect passed by the Board at their annual meeting should have a record here, and they are accordingly inserted.

DR. WILLIAM GUNTON.

Whereas this Board, since the date of its last annual meeting, has been called to mourn the loss of Dr. WILLIAM GUNTON, who for fifteen years held an honored place among its members, and who during a large portion of that time was called to preside at its deliberations: Therefore be it

Resolved, That with profound respect for his memory, we hereby testify and record our admiration for the high intellectual qualities, the rare business sagacity, the unflinching industry, and the spotless integrity with which he adorned his long, laborious and useful career in the presence of this community, and which, as they followed him in the diligent and faithful performance of every duty and trust, were especially manifest to those of us whose privilege it was to consult with him for the interests of the Hospital, and for the welfare of its afflicted inmates, who ever found in him a friend as sympathetic in feeling as he was wise in counsel.

Resolved, That while we can but deplore the loss of one who made his career as full of useful activities and honorable labors as it was full of years, we desire at the same time to add to these sincere regrets the gratulations and thanksgivings which are due for the spectacle of a finished life, as harmonious and symmetrical in its ordered proportions as it was remarkable for the length of days accorded to it by the favor of Divine Providence.

Resolved, That these resolutions be entered on the minutes of the Board, and that a copy of them be sent to the family of the deceased.

HON. RICHARD WALLACH.

Whereas the Hon. RICHARD WALLACH, for many years a member of this Board, has departed this life since the date of the last annual meeting: Therefore be it

Resolved, That with sincere admiration for the mental endowments and engaging personal qualities with which he adorned every sphere of life, and which were never to better advantage than when they called him to high and responsible public duties, we desire here to record our special and grateful recollection of the intelligence, fidelity, and zeal which he brought to the discharge of the philanthropic labors devolved upon him as a member of this Board during the entire period of his connection with it, and by which he has justly won for himself a name and place among the friends and benefactors of this institution.

Resolved, That this resolution be entered on the minutes of the Board, and that a copy of it be sent to the family of the deceased.

HON. HENRY D. COOKE.

Whereas the Hon. HENRY D. COOKE, for many years a member of this Board, has been called away from this life since the date of our last annual meeting: Therefore

Resolved, That we hereby place on record the tribute due to the commanding abilities, the high public spirit, and the patriotic enthusiasm which in a difficult crisis of our country were evinced by services as useful as they were brilliant, and which, as they followed him in the performance of the duties assumed towards this institution,

made him no less diligent than faithful in the discharge of the public trust with which he here identified his name, and with which his memory is now gratefully associated.

Resolved, That this resolution be placed on the minutes of the Board, and that a copy of it be sent to the family of the deceased.

Our acknowledgments are due to Washington amateurs for a number of dramatic and musical entertainments during the past winter, which were much enjoyed by our household, also to the Marine Band, under Professor Sousa, for an outdoor concert during the summer, which was quite an unusual treat. Amusements continue to be a prominent feature in the treatment of the insane, both here and elsewhere.

The medical staff of the hospital has been increased by the addition of a physician to the night watch, thus giving a medical officer always on duty at all hours of the day and night. Dr. A. C. Patterson, of Washington, D. C., who has for some months past performed this important night service in an acceptable manner, has been appointed to the position. We believe the result will show this step to have been a wise and important one, and that a night service which makes the medical service of a hospital continuous for the twenty-four hours will be found advantageous in all large establishments for the insane.

During a temporary absence of Dr. Witmer in Europe, Dr. M. S. Seip, senior assistant of the State Hospital at Danville, Pa., has rendered us valuable assistance.

The other officers of the staff remain as before, and have continued to perform their respective duties in a faithful and acceptable manner.

Again commending to Congress the interests of this great hospital, the importance of which can hardly be over-estimated or its responsibilities ignored,

We are, very respectfully, your obedient servants,

JOS. K. BARNES,
President of the Board.
W. W. GODDING,
Secretary ex-officio.

Hon. S. J. KIRKWOOD,
Secretary of the Interior.

GOVERNMENT HOSPITAL FOR THE INSANE,
Washington, D. C., October 1, 1881.

SIR: In accordance with act of Congress approved June 4, 1880, requiring the Superintendent of the Government Hospital for the Insane to make a report to Congress annually of the detailed receipts and expenditures of the hospital for the preceding fiscal year, I have the honor to submit the following statement.

I am, sir, very respectfully, your obedient servant,

W. W. GODDING,
Superintendent.

Hon. S. J. KIRKWOOD,
Secretary of the Interior.

* Transferred to the Department of Agriculture, for the purpose of making a survey of the same, in 1894.
 REFERENCE:

Date.	Furnished by—	On voucher numbered—	Flour, meal, and crack- ers.	Ice.	Butter, cheese, and eggs.	Fresh meats.	Smoked and salt meats.	Poultry and fish.	Tea and coffee.	Sugar and molasses.	Other groceries.	Fruits and vegetables.	Grand total.
1890.													
Aug. 3	Julia Waddy	9				\$2,113 65						\$25 70	
Aug. 7	J. T. Varnell	13									\$456 60		
17	Dan'l Loughran	25						\$3 50					
Sept. 6	G. W. Soper	31				2,180 22							
9	J. T. Varnell	31			\$1,967 56								
30	G. M. Orster & Co.	55				2,191 15							
30	J. T. Varnell	57					\$1 99	30 62					
30	Rabbit & Crown	67											
30	Andrews & Wade	84											
30	Great Falls Ice Company	85											
30	J. H. Skidmore	86		\$768 37				71 28					
30	Shafer & Clary	88							\$772 85				
30	G. G. Cornwall	96	\$15 71								95 67		
30	Benj. Charlton	102	89 68										
Oct. 27	Barbour & Hamilton	114			134 12		905 82	849 87	834 31	\$1,748 22	608 64		
27	W. M. Galt & Co.	115	1,375 28										
27	Hart & Cassel	118	136 50										
27	John H. Crane	124											
27	D. Loughran	125											
Nov. 3	J. T. Varnell	133				2,161 13					486 23		
4	D. J. Quaid	136						4 00					
20	W. O. Shreve	151											
20	David Putnam	153											
23	D. J. Foley Bro. & Co.	157				1,947 32							
Dec. 2	J. T. Varnell	165				1,858 64			669 81				
31	do	168											
31	D. Loughran	180											
31	Shafer & Clary	184									46 65		
31	Charles Mades	196											
31	Knorring & Middleton	198											
31	Andrews & Wade	203											
31	Great Falls Ice Company	219		246 55						136 92	82 53		
31	Benj. Charlton	222	106 35										

Classified expenditures—Continued.
SUBSISTENCE—Continued.

Date.	Furnished by—	On voucher numbered—	Flour, meal, and crack- ers.	Ice.	Butter, cheese, and eggs.	Fresh meats.	Smoked and salt meats.	Poultry and fish.	Tea and coffee.	Sugar and molasses.	Other groceries.	Fruits and vegetables.	Grand total.
1880.													
Dec. 31	Harvey & Holden	923						\$334 28				\$10 35	
31	Rabbit & Crown	924						533 86				978 21	
31	J. H. Crane	926											
31	Carl M. Miller & Son	924									\$80 84		
31	J. H. Skidmore	927						51 46					
1881.													
Jan. 25	G. G. Cornwell	931	\$14 80					22 05	\$588 02		201 32	521 72	
25	W. M. Galt & Co.	932	2, 665 63										
25	G. M. Oyler & Co.	933			\$2, 085 95								
25	Barbour & Hamilton	934			188 47			850 44	11 36	\$1, 672 57	652 72	36 00	
29	D. J. Quaid	973					\$1, 212 15	7 00					
Feb. 3	J. T. Varnell	274				\$1, 997 56							
8	D. J. Kelly	275							524 18				
18	D. J. Kelly Bros. & Co.	280											
25	Hart & Cleavel	284	856 88			2, 141 36							
25	J. T. Varnell	286				2, 227 57							
Mar. 31	do.	318								7 50			
31	E. Morrison	319											
31	Andrews & Wade	326						410 50				92 50	
31	Hartley & Holden	332											
31	B. Chardon	334	92 91								498 41		
31	D. J. Quaid	839											
31	Good Falls Ice Company	343		\$32 57									
31	Rabbit & Crown	348						239 80					
31	J. H. Skidmore	349						109 42					
31	G. M. Oyler & Co.	356			2, 601 56								
31	G. G. Cornwell	358	8 96										
31	G. G. Cornwell	358											
May 13	Harvey & Holden	401						10 42	795 73		217 27	176 09	
16	Harvey & Holden	422						67 50					
June 22	Proving & Middleton	431	220 50										
31	G. G. Cornwell	449			4 04		68 29	30 84	464 14	107 62	30 71		
30	W. M. Galt & Co.	451									145 50	172 85	
30	E. Morrison	453	2, 930 55										
30	Shaner & Clary	456								15 00			608 75

30	Beal, Charlton	461	08 20	0 43	113 05	35 40	104 04	113 10	40 02	
30	P. F. Ham	463		10 84	138 86	30 88		113 04	275 76	
30	Irving, Cleary & Co.	464							404 58	
30	D. Loughran	473		6,983 48						
30	J. T. Varnell	480				303 45				
30	J. H. Skidmore	498								
30	Great Falls Ice Company	500	186 60							90 60
30	Rabbits & Crown	502				127 00				85 00
30	Andrews & Wade	515		2,248 01						
30	G. M. Oyster & Co.	516		78 41	505 08	48 16		439 16	416 32	
30	Barbour & Hamilton	518		148 89	848 51	408 37	280 16	2,805 02	878 34	
Apr. 26	do.	4								57 75
26	W. M. Galt & Co.	5	2,224 88							
	Totals		10,824 04	1,244 09	10,028 11	25,764 10	3,684 70	5,239 50	5,776 50	4,236 31
										\$77,314 73

Classified expenditures—Continued.

HOUSE FURNISHING, FUEL, LIGHTS, ETC.

Date.	Furnished by—	On voucher numbered—	Furniture, furnishings, &c.	Bedding.	Table and towel linen.	Utenells, crockery, &c.	Kitchen fittings, &c.	Laundry supplies.	Carpets.	Repairing billiard tables.	Hard coal.	Soft coal.	Lights, oils, &c.	Grand Total.
1880.														
July 27	H. Hoffa.....	7	\$73 00											
Aug. 9	Boardman & Smith.....	8	72 00											
Aug. 9	Mellen & Co.....	15	\$323 20										\$40 00	
Aug. 9	American Fusee Company.....	17												
Aug. 9	D. T. Dieterick.....	21				\$53 00								
Aug. 16	Troy Laundry Machine Company.....	22						\$80 00						
Aug. 16	McKee & Co.....	23				24 34		95 27			\$1,792 23			
Aug. 16	Rich. Sheldon.....	24												
Sept. 9	Johnson Bros.....	29						13 50				\$1,631 53		
Sept. 9	Rutchen Bros.....	33												
Sept. 13	Browning & Middleton.....	34					\$40 00							
Sept. 17	Johnson Bros.....	40												
Sept. 17	T. M. Davis.....	44	1 25											
Sept. 18	Moore & Wilcomb.....	46		45 00										
Sept. 18	M. G. Copeland & Co.....	47	19 50											
Sept. 24	George Wyckoff, Jr.....	48	3 10											
Sept. 24	McKee & Co.....	49				71 25								
Sept. 24	John A. Williams & Co.....	51												
Sept. 24	Framhall, Deane & Co.....	52					34 82		\$285 73				264 29	
Sept. 24	F. Linsbach.....	59												
Sept. 24	W. E. Moses.....	60												
Sept. 30	Johnson Bros.....	69	202 27									5,161 49	36 00	
Sept. 30	Samuel Stevenson.....	71												
Sept. 30	E. B. Laflerty.....	74	232 22											
Sept. 30	E. B. Laflerty.....	81	10 50											
Sept. 30	Singleton & Horle.....	86							110 50					
Sept. 30	J. W. Baker & Son.....	86	10 80			126 38								
Sept. 30	Wash. E. Williams.....	1	60 00											
Sept. 30	Glover & Wilcomb.....	2		638 99										
Aug. 9	Gardner & Co.....	4	892 02											
Aug. 10	J. Langburg.....	8	71 00											

Classified expenditures—Continued.
HOUSE FURNISHING, FUEL, LIGHTS, ETC.

Date.	Furnished by—	On voucher numbered—	Furniture, furnishings, &c.	Bedding.	Table and towel linen.	Utensils, crockery, &c.	Kitchen fittings, &c.	Laundry supplies.	Carpets.	Repairing billiard ta- bles.	Hard coal.	Soft coal.	Lights, oils, &c.	Grand Total.
	H. Hoffa.....	7	\$73 00											
	Boardman & Smith.....	8	72 00											
	Mellen & Co.....	10		\$223 20									\$60 00	
	American Fuse Company.....	17												
	W. J. Dietrich.....	21				\$33 00		\$30 00						
	Laundry Machine Company.....	22												
	Seill & Co.....	23				24 34		95 27			\$1,792 23			
	Sheldon.....	24												
	Johnson Bros.....	29												
	Johnson Bros.....	33												
	Johnson Bros.....	34					\$40 00	13 50				\$1,631 53		
	Johnson Bros.....	40												
	Johnson Bros.....	44	1 25											
	Johnson Bros.....	46		45 00										
	Johnson Bros.....	47	19 50											
	Johnson Bros.....	48	3 10											
	Johnson Bros.....	49				71 26								
	Johnson Bros.....	51												
	Johnson Bros.....	52					34 82		\$285 73					
	Johnson Bros.....	53												
	Johnson Bros.....	59												
	Johnson Bros.....	61												
	Johnson Bros.....	62	202 27											
	Johnson Bros.....	63												
	Johnson Bros.....	71		232 22										
	Johnson Bros.....	74		10 50								5,161 49		
	Johnson Bros.....	81												
	Johnson Bros.....	82												
	Johnson Bros.....	88												
	Johnson Bros.....	94	10 80											
	Johnson Bros.....	95				126 38								
	Johnson Bros.....	96												
	Johnson Bros.....	97	69 00											
	Johnson Bros.....	98		638 09										
	Johnson Bros.....	99												
	Johnson Bros.....	100	892 62											
	Johnson Bros.....	101												
	Johnson Bros.....	102	71 00											

Classified expenditures—Continued.

HOUSE FURNISHING, FUEL, LIGHTS, ETC.—Continued.

Date.	Furnished by—	On voucher numbered—	Furniture, furnishings, &c.	Bedding.	Table and towel linen.	Utenells, crockery, &c.	Kitchen fittings, &c.	Laundry supplies.	Carpets.	Repairing billiard tables.	Hard coal.	Soft coal.	Lights, oils, &c.	Grand total.
1881.														
Feb. 25	Hayward & Hutchinson	296												
Mar. 18	Paul Hiser	306				\$12 00	\$23 60							
Mar. 29	Troy Laundry Machine Company	313						\$6 60						
29	Tribull Bros	316					9 95							
31	E. Morrison	319	\$46 85											
31	M. W. Beveridge	329				261 63				\$3 25				
31	Miller & Jones	335				5 85								
31	W. H. Harrover	340												
31	W. B. Moses & Son	344												
31	Francis Miller	346			\$54 24				\$30 50				\$36 50	
31	Lansburgh & Bro.	359		\$461 26										
31	J. Harper	363		14 52										
31	E. B. Jafferty	364		636 14										
Apr. 6	T. B. Dyer	374		21 57									316 15	
22	J. H. Williams & Co.	385					2 00				\$5 28			
27	William Beaman	387												
May 3	James Joyce	389		24 37										
13	Bramhall, Deane & Co	393				17 36								
13	George Chipman & Co	398					37 33							
20	Johnson Bros	402									967 24			
June 3	Tribull Bros	404					93 37							
16	G. W. Gates	411	32 00											
22	Browning & Middleton	423						10 56						
22	Harris & Shafer	431				1 00								
22	Hayward & Hutchinson	432												
22	W. B. Williams	436					13 00							
30	F. Miller	437	113 00											
30	W. B. Moses & Son	452												
30	W. B. Moses & Son	455	62 50											
30	M. W. Galt, Bro. & Co	456	50											
30	Pallos Lansburgh	470							96 61				21 00	
30	E. B. Lafferty	483		352 74										

Classified expenditures—Continued.

DRY GOODS AND CLOTHING, BOOKS AND STATIONERY, AND MISCELLANEOUS.

	Furnished by—	On voucher numbered—	Boots, shoes, and slippers (new and repairing).	New clothing.	Material for clothing.	Hats.	Notions.	Books and periodicals.	Stationery and postage.	Freight and hauling.	Incidental work, &c.	Grand total.
1885.												
July 16	James Small	4									\$9.80	
July 17	Jacob Millard	5									9.90	
Aug. 7	James Van Leer	12						\$127.80				
9	National Republican	18									20.00	
9	Daily Critic	19									10.67	
9	Washington Journal	20									20.10	
18	H. B. Cladin & Co	26			\$922.88							
Sept. 9	G. C. Maynard	35									15.00	
10	James Small	36									2.00	
18	W. Lee White	45						5.75				
30	W. Ballantyne & Son	60						\$6.00				
30	George King	62	\$75.29									
30	J. J. Chapman	63							47.05			
30	H. Adler, agent	64					\$214.98					
30	K. Morrison	65							31.87			
30	B. Robinson & Co.	66										
30	Baltimore and Potomac Railroad Company	73		\$12.00						\$2.82		
30	Philadelphia steamer	76								9.25		
30	G. W. Knox	77								1.90		
30	Baltimore and Ohio Railroad Company	78								9.29		
30	R. P. A. Denham	80								81.60		
30	William Beaman	82									6.30	
30	Washington City post-office	89							34.41			
30	Evening Star Company	90						41.96				
30	Washington Post	91						52.25				
30	National Republican	92						23.60				
30	A. Saks & Co.	98		231.50								
30	R. Cohen	99	678.37									
30	Laneburgh & Bro.	100			753.27							
30	Adams Express Company	103										
30	C. H. Townsend	107			752.90							
Oct. 9	John F. Gray	109						5.00				

Classified expenditures—Continued.

DRY GOODS AND CLOTHING, BOOKS AND STATIONERY, AND MISCELLANEOUS—Continued.

Date.	Furnished by—	On voucher numbered—	Boots, shoes, and slippers (new and repairing).	New clothing.	Material for clothing.	Hats.	Notions.	Books and periodicals.	Stationery and postage.	Freight and hauling.	Incidental work, &c.	Grand total.
1891.												
Mar. 31	Lausburgh & Bro	359		\$557 64						\$29 51		
31	Adams Express Company	366								13 80		
31	Baltimore and Ohio Railroad Company	367								60		
31	Baltimore and Ohio Express Company	368								7 12		
31	J. H. Johnson & Co	369								15 20		
31	Baltimore and Potomac Railroad Company	370										
Apr. 22	C. H. Townsend	386		512 70				\$8 70				
May 10	John Wiley's Sons	396									\$2 00	
27	Elias Weber	407									18 00	
27	William Neel	408									2 50	
June 3	American Shearer Company	414									8 00	
13	James Small	418										
20	Interior Department	425										
22	Sunday Chronicle	426						\$30 90			6 72	
22	Lewia Bear	428					\$1 79					
22	H. L. Pelouze & Son	429									4 00	
22	George King	434	\$87 10								15 33	
23	Evening Graphic	439									2 15	
30	Evening Star Company	448										
30	J. J. Chapman	450						46 35				
30	E. Morrison	458		150 00	\$214 99			165 70				
30	Lausburgh & Bro	460									10 50	
30	R Cohen	462	141 95							8 00		
30	Washington Post	472										
30	J. T. Price & Son	474									27 00	
30	John Boyle	477										
30	Baltimore and Ohio Railroad Company	478										
30	McFarland & Stephenson	479										
30	Adams Express Company	480										
30	Baltimore and Potomac Railroad Company	481										
30	Sunday Herald	482										
30	J. Millard	484									7 00	
											19 30	

Classified expenditures—Continued.
SUBSISTENCE—Continued.

Date.	Furnished by—	On voucher numbered—	Flour, meal, and crack- ers.	Ice.	Butter, cheese, and eggs.	Fresh meats.	Smoked and salt meats.	Poultry and fish.	Tea and coffee.	Sugar and molasses.	Other groceries.	Fruits and vegetables.	Grand total.
1880.													
Dec. 31	Harvey & Holden	223						\$324 38				\$10 35	
31	Rabitt & Crown	224						533 86				978 21	
31	J. H. Crane	226											
31	Carl Mueller & Son	234									\$80 84		
31	J. H. Skidmore	237						51 46					
1881.													
Jan. 25	G. G. Cornwell	261	\$14 80					22 05	\$538 02		201 32	521 72	
25	W. M. Galt & Co.	262	2 665 63										
25	G. M. Oyater & Co.	264			\$2 685 95								
29	Barbour & Hamilton	273			138 47		\$1 212 15	350 44	11 86	\$1 672 57	632 72	36 00	
Feb. 3	D. J. Quaid	274						7 00					
3	J. T. Varnell	275				\$1 997 56							
18	D. J. Foley, Bro. & Co.	286							524 18				
25	Herr & Cissel	294	859 88										
25	J. T. Varnell	298											
31	do.	318								7 50			
31	E. Morrison	319										92 50	
31	Andrews & Wade	326						410 50					
31	Harvey & Holden	332											
31	B. Charlton	334	92 61										
31	D. Longhran	339									496 41		
31	Great Falls Ice Company	343		\$32 57									
31	Rabitt & Crown	345						239 80					
31	J. H. Skidmore	349						109 42					
31	G. M. Oyater & Co.	356			2 601 59								
31	G. G. Cornwell	358	8 96										
31	Harvey & Holden	401						10 42	785 73		217 27	176 09	
May 13	Harvey & Cissel	422	220 50					67 50					
June 22	Browning & Middleton	431			4 64		68 29	30 84		107 62	39 71		
30	G. G. Cornwell	449							464 14		145 50	172 85	
30	W. M. Galt & Co.	451	2 620 55							15 00			
30	E. Morrison	453											698 75
30	Shuifer & Clary	456											

30	Boyd Charlton	461	93 39	9 43	112 55	32 40	199 94	112 10	49 32		
30	P. K. Bacon	463		10 94	136 86	30 88		112 04	275 78		
30	Hume, Cleary & Co.	464							494 86		
30	D. Loughran	466									
30	J. T. Varnell	473			6,983 46						
30	J. H. Skidmore	489				393 45					
30	Great Falls Ice Company	496	196 60								
30	Rabbit & Crown	500				127 00					90 60
30	Andrews & Wade	502									85 00
30	G. M. Oyater & Co.	515		2,248 61	566 06	48 16					
30	Barbour & Hamilton	516		76 41	848 51	406 37	280 16	439 16	416 32		
30	do.	4		148 39				2,805 02	878 34		57 75
30	W. M. Galt & Co.	5	2,224 88								
	Totals		10,894 04	1,244 09	10,026 11	26,764 10	3,853 23	3,684 70	5,239 50	6,656 15	4,236 31
											\$77,314 73

Classified expenditure—Continued.
HOUSE FURNISHING, FUEL, LIGHTS, ETC.

Date.	Furnished by—	On voucher numbered—	Furniture, furnishings, &c.	Bedding.	Table and towel linen.	Utenails, crockery, &c.	Kitchen fittings, &c.	Laundry supplies.	Carpets.	Repairing billiard table.	Hard coal.	Soft coal.	Lights, oils, &c.	Grand Total.
1880.														
July 30	H. Hoffa.....	7	\$73 00											
Aug. 9	Beardman & Smith.....	8	72 00											
Aug. 9	Mellen & Co.....	15		\$23 20									\$60 00	
Aug. 9	American Fusee Company.....	17												
Aug. 9	D. T. Dickster.....	21				\$33 00								
Aug. 16	Troy Laundry Machine Company.....	23						\$60 00						
Aug. 16	McKissell & Co.....	22												
Aug. 16	Nich. Sheldon.....	24				24 34		95 27						
Sept. 9	Johnson Bros.....	29					\$40 00				\$1,792 23			
Sept. 13	Hutchinson Bros.....	33												
Sept. 13	Browning & Middleton.....	34												
Sept. 13	Johnson Bros.....	40												
Sept. 17	T. M. Davis.....	44	1 25									\$1,631 53		
Sept. 17	Glover & Wilcomb.....	46	45 00											
Sept. 18	M. G. Copeland & Co.....	47	19 50											
Sept. 24	George Ryneal Jr.....	48	3 10											
Sept. 24	Meisell & Co.....	49				71 26								
Sept. 24	John A. Williams & Co.....	51												
Sept. 24	Bramhall Deane & Co.....	53					34 82							
Sept. 30	J. Lansburgh.....	59							\$255 73					
Sept. 30	Francis Miller.....	61											36 00	
Sept. 30	W. B. Moses.....	69	202 27											
Sept. 30	Johnson Bros.....	71										5,161 49		
Sept. 30	Samuel Stevenson.....	74	232 22											
Sept. 30	E. B. Lafferty.....	81	10 50											
Sept. 30	Singleton & Horke.....	83												
Sept. 30	Louis Bear.....	94	10 80						110 50					
Sept. 30	J. W. Boteler & Son.....	95												
Sept. 30	Wash. B. Williams.....	1	69 00			126 36								
Sept. 30	Glover & Wilcomb.....	3		683 99										
Aug. 10	Gardner & Co.....	4	892 62											
Aug. 14	J. Lansburgh.....	8	71 00											

[illegible]

Classified expenditures—Continued.
HOUSE FURNISHING, FUEL, LIGHTS, ETC.—Continued.

Date.	Furnished by—	On voucher numbered—	Furniture, furnishings, &c.	Bedding.	Table and towel linen.	Utensils, crockery, &c.	Kitchen fittings, &c.	Laundry supplies.	Carpets.	Repairing billiard ta-	Hard coal.	Soft coal.	Lights, oils, &c.	Grand total.
1881.														
Feb. 18	Hayward & Hutchinson	296				\$12 00	\$23 60							
Mar. 25	Paul Hiser	306												
Mar. 29	Troy Laundry Machine Company	313						\$6 60						
Mar. 29	Triphill Bros	316												
31	E. Morrison	319	\$46 85				9 95							
31	M. W. Boyeridge	329												
31	Miller & Jones	335				261 63								
31	W. H. Harver	340				9 00								
31	W. B. Moses & Son	344				5 85								
31	Francis Miller	346												
31	Lansburgh & Bro.	359												
31	J. Harper	363	\$461 26	\$54 24										
31	J. Harper	364		14 53										
31	E. B. Lafferty	374		636 14										
Apr. 6	T. B. Dyer	375		21 57										
22	J. H. Williams & Co.	385												
22	William Beaman	387												
27	William Palmer	390					2 00							
May 3	James Joyce	393		24 37										
13	Bramhall, Deane & Co.	398									\$5 28			
13	George Chapman & Co.	402				17 36								
20	Johanson Bros	404					37 33							
June 3	Triphill Bros	411					83 37				887 24			
16	G. W. Gates	423												
22	Browning & Middleton	431	32 00					10 58						
22	Harris & Shafer	432												
22	Hayward & Hutchinson	436				1 00								
22	W. B. Williams	437	113 00				13 00							
30	F. Miller	452												
30	W. B. Moses & Son	455	62 50											
30	M. W. Galt, Bro. & Co.	468												
30	Julius Lansburgh	470												
30	E. B. Lafferty	481		352 74					96 61				21 00	

Classified expenditures—Continued.

DRY GOODS AND CLOTHING, BOOKS AND STATIONERY, AND MISCELLANEOUS.

Furnished by—		On voucher numbered—	Boots, shoes, and slippers (new and repairing).	New clothing.	Material for clothing.	Hats.	Notions.	Books and periodicals.	Stationery and postage.	Freight and hauling.	Incidental work, &c.	Grand total.
1889.												
July 16	James Small	4									\$9 80	
July 17	Jacob Millard	5									9 90	
Aug. 7	James Van Leer	12						\$127 30			20 00	
Aug. 9	National Republican	18									16 67	
Aug. 9	Daily Critic	19									20 10	
Aug. 9	Washington Journal	20									15 00	
Aug. 18	H. B. Clafin & Co	26			\$922 88						2 00	
Sept. 9	G. C. Maynard	35										
Sept. 10	James Small	36										
Sept. 18	W. Lee White	45						5 75				
Sept. 30	W. Ballantyne & Son	60						\$6 00				
Sept. 30	George King	62	\$75 29									
Sept. 30	J. J. Chapman	63						47 05				
Sept. 30	H. Adler, agent	64					\$214 93					
Sept. 30	E. Morrison	65						31 87				
Sept. 30	B. Robinson & Co.	66		\$12 00						\$2 82		
Sept. 30	Baltimore and Potomac Railroad Company	73								9 25		
Sept. 30	Philadelphia steamer	76								1 90		
Sept. 30	G. W. Knox	77								9 29		
Sept. 30	Baltimore and Ohio Railroad Company	78								81 60	6 50	
Sept. 30	R. P. A. Denham	80										
Sept. 30	William Beaman	82							34 41			
Sept. 30	Washington City post-office	89						41 95				
Sept. 30	Evening Star Company	90						52 25				
Sept. 30	Washington Post	91						23 60				
Sept. 30	National Republican	92										
Sept. 30	A. Saks & Co.	93		231 50								
Sept. 30	R. Cohen	99	678 37									
Sept. 30	Laneburg & Bro.	100			753 27							
Sept. 30	Adams Express Company	101										
Sept. 30	C. H. Townsend	107			702 50					11 85		
Oct. 9	John P. Gray	109						6 00				

[illegible]

Classified expenditures—Continued.

DRY GOODS AND CLOTHING, BOOKS AND STATIONERY, AND MISCELLANEOUS—Continued.

Date.	Furnished by—	On voucher numbered—	Boots, shoes, and slippers (new and repairing).	New clothing.	Material for clothing.	Hats.	Notions.	Books and periodicals.	Stationery and postage.	Freight and hauling.	Incidental work, &c.	Grand total.
1881.												
Mar. 31	Lansburgh & Bro	359		\$557 64						\$29 51		
31	Adams Express Company	366								13 80		
31	Baltimore and Ohio Railroad Company	367								60		
31	Baltimore and Ohio Express Company	368								7 12		
31	J. H. Johnson & Co	369								15 20		
31	Baltimore and Potomac Railroad Company	370										
Apr. 22	C. H. Townsend	386		512 70								
May 10	John Wiley's Sons	386						\$8 70			\$2 00	
May 27	Elisa Weber	407									18 00	
27	William Noel	408									2 50	
June 3	American Shearer Company	414									8 00	
13	James Small	418										
20	Interior Department	425							\$30 90			
22	Sunday Chronicle	426									6 72	
22	Lewis Dear	428					\$1 79					
22	H. L. Pelouze & Son	429	\$37 10								4 00	
22	George King	434									15 33	
23	Evening Critic	439									2 15	
30	Evening Star Company	448										
30	J. J. Chapman	450										
30	E. Morrison	453						46 35				
30	Lansburgh & Bro	460	150 00	\$214 99				105 70				
30	R. Cohen	462	141 95									
30	Washington Post	472								8 00	19 50	
30	J. T. Price & Son	474										
30	John Boyle	477									27 00	
30	Baltimore and Ohio Railroad Company	478								30		
30	McFarland & Stephenson	479										
30	Adams Express Company	480										
30	Baltimore and Potomac Railroad Company	481								3 70		
30	Sunday Herald	482								1 21		
30	J. Millard	484									7 00	
											10 90	

Classified expenditures—Continued.

MEDICAL SUPPLIES; EXPENDED FOR INDIVIDUAL PATIENTS AND FOR PATIENTS' AMUSEMENT.

Date.	Furnished by—	On voucher numbered—	Drugs and medicines.	Alcoholic stimulants.	Instruments.	Excess of board paid in advance and refunded.	Bought with patients' money.	Returning eloped patients.	Amusement of patients.	Sending to homes.	Grand total.
1880											
July 1	John Smith.....	1									
6	Abraham Lee.....	2									
12	J. H. Plimsted.....	3						\$5 00			
27	Alex. Hawkins.....	6			\$2 50						
Aug. 5	J. F. Hitcherson.....	10									
9	Thomas Brown.....	14									
28	John Tillman.....	28									
Sept. 9	S. O. Dunbar.....	32	\$6 00								
11	George Duval.....	37									
11	George Craig.....	38									
13	John Tillman.....	41									
13	Jackson Gordon.....	42									
16	John James.....	43									
24	John Cooksey.....	50									
29	Daniel McCleary.....	53									
30	S. F. Shreve.....	73	218 77	\$108 90						\$59 50	
30	M. J. Stack.....	75									
30	W. W. Godding.....	79					\$13 25		\$8 00		
30	Scott & Cromwell.....	87	160 27	5 00							
30	G. G. Cornwell.....	96		70 50							
30	A. Saks & Co.....	98					114 95				
30	R. Cohen.....	99					8 50				
30	Lansburgh & Bro.....	100					9 75				
Oct. 9	Samuel Anderson.....	108						5 00			
27	Barbour & Hamilton.....	114									
27	H. L. Strasburger.....	119		81 75			1 25				
Nov. 3	G. W. Foster.....	135									
20	M. E. Berry.....	154									
22	Marshall Phillips.....	156				\$20 57				50	
27	James Reeves.....	160									
27	J. H. Rowland.....	178				28 21					
Dec. 13	Alex. Bryant.....	179									

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 195

1891.	1890.	1889.	1888.	1887.	1886.	1885.	1884.	1883.	1882.	1881.
Jan. 1	1	1	1	1	1	1	1	1	1	1
Jan. 8	8	8	8	8	8	8	8	8	8	8
Jan. 13	13	13	13	13	13	13	13	13	13	13
Jan. 15	15	15	15	15	15	15	15	15	15	15
Jan. 23	23	23	23	23	23	23	23	23	23	23
Jan. 25	25	25	25	25	25	25	25	25	25	25
Jan. 26	26	26	26	26	26	26	26	26	26	26
Jan. 28	28	28	28	28	28	28	28	28	28	28
Jan. 29	29	29	29	29	29	29	29	29	29	29
Jan. 31	31	31	31	31	31	31	31	31	31	31
Feb. 5	5	5	5	5	5	5	5	5	5	5
Feb. 8	8	8	8	8	8	8	8	8	8	8
Feb. 13	13	13	13	13	13	13	13	13	13	13
Feb. 23	23	23	23	23	23	23	23	23	23	23
Feb. 25	25	25	25	25	25	25	25	25	25	25
Feb. 26	26	26	26	26	26	26	26	26	26	26
Feb. 28	28	28	28	28	28	28	28	28	28	28
Feb. 29	29	29	29	29	29	29	29	29	29	29
Mar. 3	3	3	3	3	3	3	3	3	3	3
Mar. 8	8	8	8	8	8	8	8	8	8	8
Mar. 13	13	13	13	13	13	13	13	13	13	13
Mar. 15	15	15	15	15	15	15	15	15	15	15
Mar. 23	23	23	23	23	23	23	23	23	23	23
Mar. 25	25	25	25	25	25	25	25	25	25	25
Mar. 26	26	26	26	26	26	26	26	26	26	26
Mar. 28	28	28	28	28	28	28	28	28	28	28
Mar. 29	29	29	29	29	29	29	29	29	29	29
Mar. 31	31	31	31	31	31	31	31	31	31	31
Apr. 1	1	1	1	1	1	1	1	1	1	1
Apr. 8	8	8	8	8	8	8	8	8	8	8
Apr. 13	13	13	13	13	13	13	13	13	13	13
Apr. 15	15	15	15	15	15	15	15	15	15	15
Apr. 23	23	23	23	23	23	23	23	23	23	23
Apr. 25	25	25	25	25	25	25	25	25	25	25
Apr. 26	26	26	26	26	26	26	26	26	26	26
Apr. 28	28	28	28	28	28	28	28	28	28	28
Apr. 29	29	29	29	29	29	29	29	29	29	29
Apr. 31	31	31	31	31	31	31	31	31	31	31
May 1	1	1	1	1	1	1	1	1	1	1
May 8	8	8	8	8	8	8	8	8	8	8
May 13	13	13	13	13	13	13	13	13	13	13
May 15	15	15	15	15	15	15	15	15	15	15
May 23	23	23	23	23	23	23	23	23	23	23
May 25	25	25	25	25	25	25	25	25	25	25
May 26	26	26	26	26	26	26	26	26	26	26
May 28	28	28	28	28	28	28	28	28	28	28
May 29	29	29	29	29	29	29	29	29	29	29
May 31	31	31	31	31	31	31	31	31	31	31
June 1	1	1	1	1	1	1	1	1	1	1
June 8	8	8	8	8	8	8	8	8	8	8
June 13	13	13	13	13	13	13	13	13	13	13
June 15	15	15	15	15	15	15	15	15	15	15
June 23	23	23	23	23	23	23	23	23	23	23
June 25	25	25	25	25	25	25	25	25	25	25
June 26	26	26	26	26	26	26	26	26	26	26
June 28	28	28	28	28	28	28	28	28	28	28
June 29	29	29	29	29	29	29	29	29	29	29
June 31	31	31	31	31	31	31	31	31	31	31
July 1	1	1	1	1	1	1	1	1	1	1
July 8	8	8	8	8	8	8	8	8	8	8
July 13	13	13	13	13	13	13	13	13	13	13
July 15	15	15	15	15	15	15	15	15	15	15
July 23	23	23	23	23	23	23	23	23	23	23
July 25	25	25	25	25	25	25	25	25	25	25
July 26	26	26	26	26	26	26	26	26	26	26
July 28	28	28	28	28	28	28	28	28	28	28
July 29	29	29	29	29	29	29	29	29	29	29
July 31	31	31	31	31	31	31	31	31	31	31
Aug. 1	1	1	1	1	1	1	1	1	1	1
Aug. 8	8	8	8	8	8	8	8	8	8	8
Aug. 13	13	13	13	13	13	13	13	13	13	13
Aug. 15	15	15	15	15	15	15	15	15	15	15
Aug. 23	23	23	23	23	23	23	23	23	23	23
Aug. 25	25	25	25	25	25	25	25	25	25	25
Aug. 26	26	26	26	26	26	26	26	26	26	26
Aug. 28	28	28	28	28	28	28	28	28	28	28
Aug. 29	29	29	29	29	29	29	29	29	29	29
Aug. 31	31	31	31	31	31	31	31	31	31	31
Sep. 1	1	1	1	1	1	1	1	1	1	1
Sep. 8	8	8	8	8	8	8	8	8	8	8
Sep. 13	13	13	13	13	13	13	13	13	13	13
Sep. 15	15	15	15	15	15	15	15	15	15	15
Sep. 23	23	23	23	23	23	23	23	23	23	23
Sep. 25	25	25	25	25	25	25	25	25	25	25
Sep. 26	26	26	26	26	26	26	26	26	26	26
Sep. 28	28	28	28	28	28	28	28	28	28	28
Sep. 29	29	29	29	29	29	29	29	29	29	29
Sep. 31	31	31	31	31	31	31	31	31	31	31
Oct. 1	1	1	1	1	1	1	1	1	1	1
Oct. 8	8	8	8	8	8	8	8	8	8	8
Oct. 13	13	13	13	13	13	13	13	13	13	13
Oct. 15	15	15	15	15	15	15	15	15	15	15
Oct. 23	23	23	23	23	23	23	23	23	23	23
Oct. 25	25	25	25	25	25	25	25	25	25	25
Oct. 26	26	26	26	26	26	26	26	26	26	26
Oct. 28	28	28	28	28	28	28	28	28	28	28
Oct. 29	29	29	29	29	29	29	29	29	29	29
Oct. 31	31	31	31	31	31	31	31	31	31	31
Nov. 1	1	1	1	1	1	1	1	1	1	1
Nov. 8	8	8	8	8	8	8	8	8	8	8
Nov. 13	13	13	13	13	13	13	13	13	13	13
Nov. 15	15	15	15	15	15	15	15	15	15	15
Nov. 23	23	23	23	23	23	23	23	23	23	23
Nov. 25	25	25	25	25	25	25	25	25	25	25
Nov. 26	26	26	26	26	26	26	26	26	26	26
Nov. 28	28	28	28	28	28	28	28	28	28	28
Nov. 29	29	29	29	29	29	29	29	29	29	29
Nov. 31	31	31	31	31	31	31	31	31	31	31
Dec. 1	1	1	1	1	1	1	1	1	1	1
Dec. 8	8	8	8	8	8	8	8	8	8	8
Dec. 13	13	13	13	13	13	13	13	13	13	13
Dec. 15	15	15	15	15	15	15	15	15	15	15
Dec. 23	23	23	23	23	23	23	23	23	23	23
Dec. 25	25	25	25	25	25	25	25	25	25	25
Dec. 26	26	26	26	26	26	26	26	26	26	26
Dec. 28	28	28	28	28	28	28	28	28	28	28
Dec. 29	29	29	29	29	29	29	29	29	29	29
Dec. 31	31	31	31	31	31	31	31	31	31	31

Classified expenditures—Continued.

MEDICAL SUPPLIES; EXPENDED FOR INDIVIDUAL PATIENTS AND FOR PATIENTS' AMUSEMENT—Continued.

Date.	Furnished by—	On voucher numbered—	Drugs and medicines.	Alcoholic stimulants.	Instruments.	Excess of board paid in advance and refunded.	Bought with patients' money.	Returning eloped patients.	Amusement of patients.	Sending to homes.	Grand total.
1881.	R. Bennett.....	409									
June 8	Samuel Wilson.....	416						\$8 12			
9	William Nelson.....	419						5 00			
13	Henry Matthews.....	424						5 00			
20	Goodyear Rubber Company	435						5 00			
22	A. Behrend.....	438			\$6 00	\$33 00					
23	W. T. Anderson.....	440						5 00			
27	Samuel Jones.....	441						5 00			
29	R. Tully.....	447							\$10 00		
30	G. G. Cornwell.....	449		\$119 50			\$4 00				
30	R. Cohen.....	462			9 50						
30	Charles Fischer.....	468							17 50		
30	M. J. Slack.....	475					9 92				
30	W. H. Godding.....	476					94 05				
30	A. Saks & Co.....	485					20 86				
30	Perry & Bro.....	494									
30	S. F. Shreve.....	505	\$302 49								
30	Slott & Cromwell.....	511	96 01						8 18		
30	W. G. Metzgeroff & Co.	514		188 58							
30	Barbour & Hamilton.....	516		77 88							
30	do.....	4									
Ayr. 26	Totals.....		1, 432 30	1, 124 77	116 48	149 78	428 70	218 12	433 63	141 45	\$4, 040 23

FARM, GARDEN, AND STABLE.

Date.	Furnished by—	On voucher numbered—	Feed.	Implements, horseshoes, &c.	Plants and seeds.	Manures.	Live stock.	Harness and repairs.	Vehicles and repairs.	Grand total.
1880.										
Aug. 7	Henry Newby	11			\$6 00					
Aug. 9	P. Henderson & Co.	16			14 00					
21	N. Studer	27			10 00					
Sept. 13	S. A. Smith	29							\$60 00	
30	J. T. Price & Son	54				\$26 00				
30	Lutz & Bro.	58						\$844 75		
30	John Anthony	68		\$4 40						
30	John A. Baker	70		117 76						
30	George W. Wood	83			23 87	99 49				
30	Allison Nailor, jr.	93			26 00					
30	W. M. Galt & Co.	115	\$1,421 44			50 00				
Oct. 27	J. McDermott & Bro	122							150 00	
27	Jacob Wenger	128							200 00	
27	John Douglass	130			14 00					
Nov. 3	John Anthony	134		5 45						
4	H. B. Cladin & Co	137						81 20		
10	James A. Beall	144							38 10	
10	J. E. Haines	145							9 25	
13	Ernest McGill	147					\$15 00			
16	R. T. Lombard	159					17 00			
29	Paul Hieser	161		11 50						
30	S. G. Wintermills & Bro	162		33 50						
Dec. 2	S. A. Smith	164								
20	James A. Beall	183							16 30	
31	J. T. Price & Son	186				25 00			80 00	
31	Lutz & Bro.	195						46 30		
31	John A. Baker	201								
31	Allison Nailor, jr.	233		105 12	143 00	14 61				
1881.						50 00				
Jan. 20	J. E. Haines	260							35 16	
25	W. M. Galt & Co	262								
Feb. 5	P. Henderson & Co.	278	1,735 65		163 58					

Classified expenses—Continued.
FARM, GARDEN, AND STABLE—Continued.

Date.	Furnished by—	On voucher numbered—	Feed.	Implements, &c.	Plants and seeds.	Manures.	Live stock.	Harness and repairs.	Vehicles and repairs.	Grand total.
1891.										
Mar. 2	J. A. Beall	279							\$68 50	
23	N. Humphrey	308			\$14 38					
28	J. A. Beall	310							23 50	
29	P. Henderson & Co	314			31 20					
31	J. T. Price & Son	317				\$25 00				
31	John Saul	321			57 65					
31	Austin Herr	324								
31	Lutz & Bro	327	\$111 00							
31	A. J. Joyce	331						\$41 42		
31	John McDermott & Bro.	333							33 36	
31	Allison Naylor, Jr.	338				50 00			77 00	
31	Washington and Georgetown Railroad Company	347				4 47				
31	John A. Baker	360		\$104 90	62 50	349 00				
Apr. 11	G. W. Woods	377			15 00					
11	William Nally	391					\$2 25			
May 17	N. Stander	403			9 00					
June 3	S. Swindells	410			8 18					
8	S. A. Smith	413		36 20						
8	J. W. Tolson	415			12 00					
30	Allison Naylor, Jr.	446				50 00				
30	W. M. Galt & Co	451	1,733 00						4 00	
30	A. J. Joyce	459								
30	J. A. Baker	467		165 13	63 73	21 80				
30	J. T. Price & Son	474				25 00	2 00			
30	John Boyle	477			3 00					
30	J. H. Mitchell	486		9 75						
30	Lutz & Bro	488						10 63		
30	Washington and Georgetown Railroad Company	501				54 00				
Apr. 26	W. M. Galt & Co	5	1,741 60							
	Totals.....		6,742 69	593 71	652 09	843 37	36 25	524 30	800 17	\$10,192 58

Continued.

RETAINS AND IMPROVEMENTS.

Date.	Furnished by—	On voucher numbered—	Lumber, doors, &c.	Hardware.	Engineers' and plumbers' supplies.	Paints, oils, glass, &c.	Roofing.	Iron work.	Plastering.	Sundry small repairs.	Fire and other apparatus, boilers, and machinery.	Masons' supplies.	Paths and roads, &c.	Lightning-rods.	Grand total.
1890.															
Sept. 30	Francis Miller	15				\$16 02									
Sept. 30	L. H. Schneider & Co	97		\$579 97											
Sept. 30	John Markriter	101	\$25 20												
Aug. 7	Ed. Smith	2							\$17 25						
Aug. 10	J. D. Croes, Jr.	5	\$42 98												
Aug. 14	R. Letich & Sons	6			\$1 089 15										
Aug. 14	Hamilton & Shedd	7			151 50										
Aug. 17	R. Shoemaker, Jr.	10				56 10									
Aug. 17	R. Shoemaker, Jr.	11													
Sept. 9	Rasbor & Stebbins	12													
Sept. 11	Morris, Tasker & Co	13			14 19										
Sept. 11	Reidlin Brothers	13	90 86												
Sept. 21	D. McChesman	14													
Sept. 21	Benjamin Kelly	15													
Sept. 30	W. F. Shreve	16													
Aug. 9	J. G. H. Clarkson	17				\$22 87							\$48 00		\$48 00
Sept. 14	J. T. Campbell	2													
Sept. 16	John Sinclair	3													
Sept. 17	White & Doorman	4						\$45 00		\$16 10					
Sept. 24	Thomas Terra-Cotta Co.	5			19 90										
Sept. 24	J. D. Croes, Jr.	6	1,848 30												
Sept. 27	J. R. Shannon & Sons	7		117 00											
Sept. 27	Campbell & Kennedy	8		20 61											
Oct. 30	R. Leach & Sons	9			134 87										
Oct. 13	John Webster	110													
Oct. 15	John M. Martin	111													
Oct. 27	J. & J. E. Libbey	114	65 03												
Oct. 27	D. H. & Co.	120													
Oct. 27	B. H. Shoemaker	126						46 80							
Oct. 27	C. T. Rayolds & Co.	128				24 00									
Nov. 6	W. G. H. Clarkson	143				212 50									
Nov. 10	William Sellers & Co.	145			35 27										
Nov. 16	J. S. Cassin & Co.	148			85 86								76 50		76 50

Classified expenditures—Continued.
REPAIRS AND IMPROVEMENTS—Continued.

Date.	Furnished by—	On voucher numbered—	Lumber, doors, &c.	Hardware.	Engineers' and plumbers' supplies.	Paints, oils, glass, &c.	Roofing.	Iron work.	Plastering.	Stundry small repairs.	Fire and other apparatus, tools, &c., boilers, and machinery.	Masons' supplies.	Paths and roads, &c.	Lighting—reels.	Grand total.
1880.												\$19 00			
Nov. 20	John Brooks	150							\$224 62						
Dec. 1	John A. Smith	163													
3	T. B. Cross, Jr.	166	\$440 23												
3	J. T. Campbell	187										53 62			
3	S. L. Merchant	188										65 52			
10	George A. Sheahan	173	34 00												
31	Washington Gas Light Co	177			\$17 60										
31	Campbell & Kennedy	200		\$71 04											
31	J. B. Kendall	200		56 20											
31	Francis Miller	204				\$43 90									
31	L. H. Schneider & Co	211		270 58											
31	Hamilton & Shedd	227			76 20										
31	R. Leitch & Sons	228			194 64										
31	J. T. Campbell	229													
31	J. T. Campbell	231										13 05			
31	S. F. Shreve	231				273 81								\$274 25	
Oct. 18	John Sinclair	21													
21	L. H. Schneider & Co	21		511 28											
21	Thomas Somerville	22			1,461 78										
23	D. McMenamin	25										67 22			
28	Pettit & Dripps	26						\$617 76							
31	George White & Co	28						1,028 40							
17	Pettit & Dripps	11						564 56							
31	Baldwin Brothers	13	56 85												
31	S. F. Shreve	14				35 06									
1881.															
Jan. 25	William Sellers & Co	267												81 82	
Feb. 4	Thomas Somerville	276			988 85										
5	George White & Co	279						214 00							
5	J. S. Cassin & Co	281			60 73										
5	J. T. Campbell	283													
5	J. T. Campbell	285													
17	T. B. Cross, Jr.	285	127 43												
21	C. W. Havens	287													\$204 75

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 201

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Classified expenditures—Continued.

SALARIES AND WAGES.

Date.	Furnished by—	On voucher numbered—	Superintendent, physicians, general office, &c.	Ward service.	Inside domestic department.	Engineers' department.	Farm and garden, hauling coal, drivers of patients, carriages, &c.	Sunday services.	Mechanics and helpers.	Manufacturing clothing, bedding, &c.	Laundry.	Grand total.
1880.												
Sept. 30	Pay-rolls, support.	104	\$2,198 20	\$4,960 81	\$534 00		\$280 22	\$87 50		\$135 00		
30	do	105		433 10	1,550 40					214 22	\$650 22	
30	do	106				\$745 87	3,442 48			90 00		
30	Pay-rolls, relief.	18										
30	Pay-rolls, repairs.	10										
Dec. 31	Pay-rolls, support.	251	2,198 50	4,062 69	567 40		246 40	87 50		134 00		
31	do	252		1,008 24	1,539 03					235 50	680 00	
31	do	253				818 11	2,163 88			116 77		
31	Pay-rolls, relief.	29								301 10		
1881.												
Mar. 31	Pay-rolls, support.	371	2,996 13	4,173 96	159 00			87 50		135 00		
31	do	372			1,326 32							
31	do	373			289 35							
June 15	J. W. Parker.	420				1,219 67	1,979 80	100 00		331 50	680 00	
15	J. G. Butler.	421						100 00				
30	John Lannahan.	442						100 00				
30	S. F. Ryan.	443						100 00				
30	A. F. Steele.	444						100 00				
30	John Chester.	445						100 00				
30	Pay-rolls, support.	518	2,706 80	4,286 05	345 00		272 98	87 50		189 00		
30	do	519		1,549 86	1,654 30					196 50	673 96	
30	do	520				845 50	2,686 39			120 00		
	Totals.		11,701 63	21,134 71	7,964 80	3,629 15	11,081 10	750 00	10,294 85	1,887 59	2,664 18	\$71,118 01

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 203

Detailed statement of receipts and expenditures for the fiscal year ending June 30, 1881.

RECEIPTS.

Appropriation for support	\$143,000 00
Appropriation for relief building	13,585 18
Appropriation for repairs and improvements	5,000 00
Appropriation for deficiency in support	11,250 00
Receipts for board and special attendance	53,311 65
Total	226,146 83

EXPENDITURES.

Subsistence:		
Flour, meal, and crackers	\$10,834 04	
Ice	1,244 09	
Butter, cheese, and eggs	10,026 11	
Fresh meats	25,764 10	
Smoked and salt meats	3,853 23	
Poultry and fish	3,684 70	
Tea and coffee	5,239 50	
Sugar and molasses	6,656 15	
Other groceries	5,776 50	
Fruits and vegetables	4,236 31	
		77,314 73
House furnishing, fuel, and lights, &c.:		
Furniture and furnishing	3,318 78	
Bedding	7,100 02	
Table and towel linen	221 28	
Utensils, crockery, &c.	1,463 84	
Kitchen fittings, &c.	1,383 01	
Laundry supplies	1,589 77	
Carpets	523 34	
Repairing billiard tables, &c	258 50	
Hard coal	3,306 59	
Soft coal	8,037 94	
Lights and oils, &c.	2,034 57	
		29,237 64
By goods and clothing; books and stationery, and miscellaneous:		
Boots, shoes, and slippers, new and repairing	2,164 80	
New clothing	4,435 28	
Material for clothing	5,283 97	
Hats	440 10	
Notions	851 25	
Books and periodicals	860 25	
Stationery and postage	763 54	
Freight and hauling	379 15	
Incidental work	388 92	
		15,567 26
Medical supplies; expended for individual patients and for patients' amusement:		
Drugs and medicines	1,432 30	
Alcoholic stimulants	1,124 77	
Instruments	116 48	
Board rebated	149 78	
Returning eloped patients	213 12	
Amusement of patients	433 63	
Sending patients to their homes	141 45	
Bought with patients' money	428 70	
		4,040 23
Farm, garden, and stable:		
Feed for stock	6,742 69	
Implements, horseshoes, &c	593 71	
Plants and seeds	652 09	
Manures	843 37	
Live stock	36 25	
Harness and repairs	524 30	
Vehicles and repairs	800 17	
		10,192 58

204 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Repairs and improvements:

Lumber, doors, &c.....	\$3,413 31	
Hardware.....	2,321 43	
Engineers' and plumbers' supplies.....	5,534 12	
Paints, oils, and glass.....	1,499 15	
Roofing.....	8 10	
Iron work.....	2,690 26	
Plastering.....	319 81	
Sundry small repairs.....	186 30	
Fire and other apparatus, boilers, &c.....	971 35	
Masons' supplies.....	724 36	
Paths, roads, &c.....	653 05	
Lightning-rods.....	356 07	
		\$18,676 31

Salaries and wages:

Superintendent, physicians, office, &c.....	11,701 63	
Ward service.....	21,134 71	
Inside domestic service.....	7,964 80	
Engineers' department.....	3,629 15	
Farm and garden; includes also hauling stores and coal, keeping roads in order, driving out patients, &c.....	11,081 10	
Sunday service.....	750 00	
Mechanics and helpers.....	10,294 85	
Manufacturing clothing, bedding, &c.....	1,897 59	
Laundry service.....	2,664 18	
		71,118 01

Covered into United States Treasury..... **07**

Total..... **226,146 83**

Itemized receipts.

1880.		
July	1. Board paid for M. E. Cazenove.....	156 00
	1. Board paid for Ann Phillips.....	52 00
	1. Board paid for Jane T. Case.....	91 00
	3. Board paid for Annie West.....	5 00
	6. Board paid for W. M. Bryant.....	91 00
	9. Board paid for H. Buchlers.....	132 00
	9. Board paid for Annie West.....	5 00
	12. Board paid for Bryan Hall.....	65 00
	12. Board paid for Sarah C. Wood.....	186 20
	14. Special attendance paid for Rollin Perkins.....	75 00
	17. Board paid for Sarah C. Cox.....	30 00
	17. Special attendance paid for G. F. Morrison.....	24 93
	17. Board paid for Marine Hospital patients.....	442 93
	21. Board paid for C. K. Yancey.....	87 00
	22. Board paid for District of Columbia patients.....	1,517 01
	22. Board paid for Adolph Berger.....	65 00
	22. Board paid for Rose Amer.....	97 50
	22. Board paid for John Weidman.....	99 35
	24. Board paid for A. F. Brooks.....	30 00
	30. Board paid for Burton Randall.....	96 00
Aug.	2. Board paid for Angelina Reeves.....	32 50
	7. Board paid for M. R. Key.....	65 00
	15. Board paid for Mary Harris.....	92 00
	19. Board paid for J. C. Fisher.....	52 00
	19. Board paid for H. S. Cattel.....	112 50
	29. Board paid for A. F. Brooks.....	35 00
Sept.	2. Board paid for Jane T. Case.....	91 00
	6. Board paid for Sarah C. Cox.....	30 00
	8. Board paid for J. P. Hutchins.....	130 75
	16. Board paid for A. F. Brooks.....	20 00
	17. Special attendance paid for Meyer Strauss.....	65 00
	22. Board paid for Henry Price.....	65 00
	28. Board paid for Lucy D. Stanton.....	122 15
	30. Board paid for Mary De Cindry.....	91 00
Oct.	2. Board paid for J. D. Harris.....	130 00
	4. Board paid for C. K. Yancey.....	100 50
	7. Board paid for Mary Harris.....	94 71
	7. Board paid for W. M. Bryant.....	91 00

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 205

1890.		
Oct.	7. Board paid for Ann Phillips	\$52 00
	8. Board paid for Bryan Hall	65 00
	11. Board paid for Marine Hospital patients	453 84
	11. Special attendance for Rollin Perkins	76 50
	11. Board paid for H. Buchlers	180 15
	12. Board paid for Adolph Berger	65 00
	13. Board paid for W. H. Hull	71 43
	16. Board paid for A. F. Brooks	20 00
	21. Board paid for M. E. Cazenove	170 11
	25. Board paid for C. K. Yancey	1 25
	27. Board paid for John Weidman	153 30
	30. Board paid for H. S. Cottel	112 50
Nov.	3. Board paid for Jennie M. Lowell	90 00
	3. Board paid for W. V. Wolfe	91 00
	3. Special attendance paid for G. F. Morrison	25 00
	6. Board paid for M. E. Key	65 00
	9. Board paid for Sarah C. Cox	30 00
	13. Board paid for Mary P. Rodgers	20 00
	24. Board paid for Burton Randall	91 00
	27. Board paid for District of Columbia patients	4,606 77
Dec.	4. Board paid for Jennie M. Lowell	2 00
	16. Board paid for District of Columbia patients	5,405 34
	17. Board paid for A. F. Brooks	30 00
	30. Clothing paid for N. T. West	21 00
	31. Board paid for Henry Price	65 00
	31. Board paid for A. F. Brooks	20 00
	31. Board paid for Jane T. Case	91 00
	31. Board paid for Mary De Caindry	91 00
1891.		
Jan.	2. Board paid for J. D. Harris	65 00
	4. Special attendance paid for Meyer Strauss	65 00
	7. Board paid for Mary P. Rodgers	77 00
	7. Board paid for Bryan Hall	100 00
	7. Board paid for W. M. Bryant	91 00
	8. Board paid for W. H. Hull	65 00
	9. Special attendance paid for Rollin Perkins	75 00
	10. Board paid for H. Buchlers	171 10
	11. Board paid for Adolph Berger	65 00
	13. Board paid for W. V. Wolfe	65 00
	15. Board paid for Marine Hospital patients	534 92
	15. Board paid for A. J. Ambler	30 00
	18. Board paid for Rose Amer	70 00
	18. Board paid for August Meyer	195 00
	19. Board paid for H. S. Cottel	112 50
	24. Board paid for District of Columbia patients	10,187 04
	24. Board paid for Sarah C. Cox	30 00
	26. Board paid for M. E. Cazenove	156 00
	26. Board paid for John Weidman	120 25
	31. Board paid for Sarah C. Wood	182 00
Feb.	1. Board paid for Ann Phillips	52 00
	3. Special attendance paid for G. F. Morrison	25 00
	3. Board paid for Jennie M. Lowell	58 00
	4. Board paid for M. E. Key	65 00
	16. Board paid for Otho Gartrell	60 00
	17. Board paid for C. K. Yancey	91 00
	19. Board paid for George Beckman	195 50
	21. Board paid for D. W. Garst	91 00
Mar.	3. Board paid for A. J. Ambler	20 00
	11. Board paid for Burton Randall	91 00
	16. Board paid for Ann Phillips	52 00
	22. Board paid for Sarah C. Cox	30 00
	22. Board paid for S. M. Tilly	20 00
	23. Board paid for A. J. Ambler	10 00
	25. Board paid for Wm. Prince	459 64
	31. Board paid for Jane T. Case	91 00
	31. Board paid for Mary De Caindry	91 00
Apr.	1. Board paid for A. J. Ambler	10 00
	2. Board paid for Jennie M. Lowell	90 00
	2. Board paid for J. D. Harris	65 00

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1881.		
Apr.	5.	Board paid for Marry Harris..... \$2 48
	7.	Special attendance paid for Rollin Perkins 75 00
	9.	Board paid for Bryan Hall 64 50
	9.	Board paid for W. H. Bryant..... 91 00
	9.	Board paid for H. Buchlers 147 00
	9.	Board paid for Mary P. Rodgers 222 20
	12.	Board paid for Adolph Berger 65 00
	12.	Board paid for W. H. Hull 65 00
	13.	Board paid for William Kiely 119 29
	13.	Board paid for Henry Price..... 65 00
	14.	Board paid for Sarah C. Cox 103 00
	15.	Board paid for Marine Hospital patients 597 14
	15.	Board paid for A. J. Ambler 12 86
	15.	Board paid for W. V. Wolfe 106 50
	18.	Board paid for C. K. Yancey 90 00
	20.	Board paid for M. E. Cazenove 156 00
	26.	Board paid for District of Columbia patients 10,304 28
	28.	Board paid for A. Behrend 91 00
	28.	Board paid for John Weidman 118 90
May	14.	Board paid for E. C. Carrington 36 00
	14.	Board paid for George Beckman 65 00
	16.	Board paid for Angelina Reeves 91 00
	19.	Board paid for D. W. Garst 39 00
	28.	Board paid for John Conline 105 00
June	1.	Board paid for M. R. Key 65 00
	3.	Board paid for J. P. Hutchins 195 00
	15.	Board paid for Bridget Cogan 65 00
	21.	Board paid for Ann Phillips 52 00
	21.	Board paid for District of Columbia patients 6,496 57
	22.	Board paid for Edward Burchell..... 192 33
	22.	Board paid for E. C. Carrington 47 00
	25.	Board paid for A. J. Homiller 91 00
	25.	Board paid for Mary P. Rodgers 182 00
	30.	Board paid for J. T. Case 91 00
	30.	Board paid for Jennie M. Lowell 92 00
	30.	Board paid for J. D. Harris 65 00
	30.	Board paid for Bryan Hall 65 00
	30.	Board paid for H. Buchlers 167 02
	30.	Board paid for Sarah R. Cox 65 33
	30.	Board paid for Mary De Caidry..... 91 00
	30.	Board paid for W. M. Bryant..... 91 00
	30.	Board paid for Marine Hospital patients..... 574 72
	30.	Board paid for Burton Randall 182 00
	30.	Board paid for M. E. Cazenove 176 86
	30.	Board paid for H. S. Cottel 225 00
	30.	Board paid for Adolph Berger..... 65 00
	30.	Special attendance paid for Rollin Perkins 75 00
Total		53,311 65

I.—REPORT OF THE OPERATIONS OF THE ENGINEER DEPARTMENT,

UNDER THE DIRECTION OF MAJ. WILLIAM J. TWINING, CORPS OF ENGINEERS, U. S. A., ENGINEER COMMISSIONER OF THE DISTRICT OF COLUMBIA.

IN REPORT OF LIEUT. RICHARD L. HOXIE, CORPS OF ENGINEERS, U. S. A. ASSISTANT TO THE ENGINEER COMMISSIONER OF THE DISTRICT OF COLUMBIA.

ENGINEER DEPARTMENT, D. C.,
Washington, October 1, 1881.

MAJOR: I have the honor to submit the following report of operations for the fiscal year ending June 30, 1881, together with estimates for the fiscal year ending June 30, 1883.

Summary statement of operations and estimates.

Description.	Expenditures during year ending June 30, 1881.	Appropriations for year ending June 30, 1882.	Estimates for year ending June 30, 1883.
Engineer Department, salaries.....	\$23,806 35	\$27,350 00	\$23,510 00
Engineer Department, temporary writers and draughtsmen.....		1,500 00	1,500 00
Engineer Department, contingent expenses.....	4,973 59	4,000 00	5,000 00
Water department, office and contingent expenses.....			14,139 00
Water department, employes, fuel, material, &c., for high service.....			16,718 75
Water department, pipe distribution to high and low service, and laying new mains.....	140,738 74		35,582 75
Water Department, interest and sinking fund on water stock bonds.....			44,610 00
Cleaning and repairing lateral sewers and basins.....	15,416 28	20,000 00	30,000 00
Lateral sewers, construction of.....	14,800 00	15,000 00	30,000 00
Boundary-street sewer.....	*78,286 40	50,000 00	100,000 00
Auxiliary sewer in Rock Creek District.....			70,000 00
Public hay scales.....	52 90	500 00	500 00
Dredging James Creek Canal.....		5,000 00	5,000 00
Markets, compensation of market masters.....	4,880 32	5,400 00	5,400 00
Markets, contingent expenses.....	4,447 16	1,500 00	1,500 00
Cleaning tidal sewers.....	2,862 81	3,000 00	3,000 00
Material for permit work, sewers.....	6,220 56	†15,000 00	10,000 00
Division of sewers and drains.....			2,460 00
New York avenue sewer and outlet.....	28,000 00	7,000 00	
Dredging channel across flats and completing canal outlet.....	8,448 14		
Pumps.....	2,997 83	3,000 00	3,500 00

*\$25.00 charged to appropriation for 1878-'79 and 1879-'80.

†Includes sewer and surface work.

SPECIAL ASSESSMENTS.

The revision of the special assessments has been completed in accordance with the acts of Congress approved June 19, 1878, and June 27, 1879. The detailed statement will be found in the report of Mr. Wm O. Roome, transmitted herewith.

The net result of the revision is as follows :

Original assessments	\$4, 875, 546 45
Revised assessments.....	3, 711, 669 92
Difference	1, 163, 876 53

In cases where the revision increased the assessment it has been held that the original and lesser assessments should stand. The aggregate decrease is, therefore, the net loss, and is \$1,240,525.14; leaving collectible, or paid, on the revised assessments, \$3,635,021.31, with interest. Interest is also due upon the unpaid assessments.

In the annual report of the Commissioners for 1875, it was estimated that the amount of special assessments yet to be issued was (approximately) \$2,078,635.69. There had then been issued \$3,150,059.47. Total, \$5,228,695.16. Upon this was predicated an available surplus, after the redemption of the 8 per cent. improvement bonds, of \$1,689,844.74.

After that date, and prior to the revisions authorized by Congress, the amount of the original assessments fell short of the estimated amount by \$353,148.71. The revisions have reduced them \$1,240,525.14; giving a total loss of \$1,593,673.85.

It would appear, therefore, that the surplus estimated in 1875 has been nearly absorbed as to the principal by the revisions.

The books of the special assessment office show a balance of uncollected tax originally pledged to the redemption of these bonds, of \$684,131.55, upon which interest at 10 per cent. is due from the various dates of the lien certificates, beginning with A. D. 1873. This interest will continue to run at 10 per cent. until the tax is paid.

It is not practicable to give from the special assessment office a statement of the 8 per cent. bonds; but it may be assumed that the amount outstanding, including principal and interest, will not exceed \$700,000. The interest is now running at 6 per cent., the bonds having all matured.

It is to be remembered, however, that the acts of June 19, 1878, and June 27, 1879, have virtually negated the law which pledged the special assessment tax collectible after May 29, 1873, to the redemption of the 8 per cents., by making drawback certificates receivable in payment of this tax. Up to this date there have been received \$244,732.41 of the drawbacks.

There are drawback certificates outstanding or ready for issue, which are receivable at any time in payment of this tax, though otherwise receivable in payment of certain arrears of general tax, amounting to \$64,838.36. Other drawback certificates are ready for issue, receivable, also, at any time in payment of this tax, and redeemable only from the proceeds of the same, amounting to \$105,520.59. The former draw no interest; upon the latter, interest is claimed.

It is evident that no further concession can be made to delinquents in this tax, unless other provision shall be made for the redemption of the drawbacks and bonds.

There has been presented to Congress, with each annual report of the Commissioners since 1873, an approximate statement of the account of the United States with the special improvement tax. The revisions having been completed, it is found that the amount chargeable to the United States is \$3,324,707.99. Credit by appropriations, \$3,522,936.18. Balance to credit of United States, \$198,228.19.

The rule of apportionment has been to place the United States in the attitude of the District government, with respect to the improvement, wherever United States property fronted upon the line. If the United States owned upon both sides of the street or avenue where improved,

the whole cost was charged to the general government. If upon one side only, five-sixths of the cost was charged to the general government, leaving one-sixth, as contemplated by law, to be assessed against private property adjoining and immediately benefited.

Specific acts making appropriations to pay the proportional part of the United States have been passed since 1871, pursuant to estimates based upon this rule. It may therefore be assumed that the basis of adjustment has had sufficiently the attention and sanction of Congress, and that credit should not be given the United States upon this account or other than appropriations specifically made for this purpose.

Concurrently with the street improvements and laying of small lateral sewers, the cost of which is the basis of the special assessments actually made, there was undertaken by the board of public works the construction of certain large main sewers, of which the principal items of cost will aggregate \$1,948,838.55.

To apportion fairly the cost of these, the board of public works levied a tax differing in method and proportion from that for the street improvements.

The city was divided into its several natural drainage areas, and each area assessed in advance of the completion of the work, for the cost of the corresponding system of drainage required, at an uniform rate per square foot. A more equitable distribution of cost could not be made. But authority of law was wanting for the levying of the tax in this manner.

The action of the board of public works was set aside by Congress, the portion of the tax collected was required to be refunded, and the sewerage certificates to be redeemed. The burden was thus lifted from the shoulders of the beneficiaries and settled upon those who were not.

As all of this was merged in the general funding of floating debt into 3.65 bonds, of which the United States assumes one-half the payment, it would appear upon superficial examination that the United States should not be debited upon its special improvement account with any part of this expenditure because of equitable considerations.

A careful consideration of all the facts appears to indicate the contrary.

The present organic law, which took effect in June, 1878, assumes for the United States one-half the debt of the District of Columbia as existing at that time. If it could be shown that an equitable balance was struck in this, then the special account for improvements would be equitably credited with that element of the funded debt so assumed.

The report of the Commissioners of the District of Columbia for 1878 (page 4) contains an approximate statement of this question, showing that after assuming one-half the debt of the District of Columbia, in June, 1878, the tardy justice of the United States is still far in arrears, approximately \$16,000,000.

Since this is the case, it requires but little reflection to see that the elements of the 3.65 funded debt have no significance. The assumption of one-half is a payment on account of a large arrears, and has no further application to the account for special improvement than has the assumption by the United States of one-half the old bonded debt of Washington and Georgetown. It was not so intended.

The annulment of the illegal special tax levied by the board of public works on account of the main sewers did not withdraw this class of work, when completed, from the operation of the law which authorized the assessment of one-third the cost upon adjoining property, but equitable considerations make the law inapplicable.

Congress has forbidden the equitable division of the cost, in proportion to the benefit conferred, and compels the alternative of not assessing at all. So the District loses the additional tax.

It is not unreasonable, then, to assume that the cost should be equally divided between the United States and the District of Columbia, the special improvement account of the United States being debited to this extent.

In closing the subject of special improvement tax I am constrained to repeat the conclusions arrived at in 1875 and reiterated in 1879 :

The operation of the law has not been always uniform and equitable, and the latitude of executive discretion in administering it has not favored uniformity of application. * * * It provided that a reasonable proportion, not exceeding one-third the cost thereof, should be assessed against the property adjoining and especially benefited by the work of improvement which the territorial government was created to inaugurate. For similar improvement under the preceding form of government the entire cost was assessed against the adjoining property.

Under the present permanent commission government the United States pays one-half, the general fund of the District one-half, and adjoining property pays nothing. This is the opposite extreme, between which and the corporation method of imposing the whole cost upon adjoining property the law assessing one-third of the cost was the mean. In consulting the wishes of property-owners as to the location of needed improvements, it will be difficult to find any law of natural selection to take the place of this. Under the corporation government the expressed wish of the adjoining owners was a necessary preliminary to the execution of the work and the consequent imposition of the tax. Under the present government the absence of a special tax evokes contending claimants for the benefits of the work of improvement.

It is to be remembered that the "rules for revision" recognize the obligation of the District of Columbia to replace the rotten wood pavements, for which a special tax is collected, with other and durable pavements.

DRAINAGE AND SEWERAGE.

Work has progressed rather slowly upon the Boundary intercepting sewer. Some difficulty has been encountered from subterranean springs, sandy bottom, and caving banks, but the principal obstacle has been the delay incidental to contract work. The cost has been increased by the nature of the foundation required, and the delay has caused the loss of the advantage due to the lower prices prevailing at the time this work was first advertised. The lower and larger section, 22 feet in diameter, has been completed, and no further difficulty is encountered at present in constructing the 20-foot section. In all, about 3,000 feet have been completed.

It is proposed to begin the relief of the northwestern section of Washington by constructing an additional main sewer in the Slash Run District, where it is very much needed. The present sewers are too small, and will flood nearly every house in this district in severe storms. An estimate for this is presented herewith.

Another severe storm last June sustains the record of the past 20 years, and shows the necessity for ample capacity in the sewers. A rainfall occurred of 2.35 inches in the afternoon of the 28th, of which 1.566 inches fell in 25 minutes, a rate of $3\frac{1}{4}$ inches per hour. The New York avenue sewer had just been completed. Its size is computed for a rainfall of 2 inches per hour, and it was severely tried, the water standing four feet above the arch in the man-holes. It is to be regretted that at this time the lower part of the sewer was somewhat obstructed by an awkward attachment of telegraph wires to the interior of the arch. This had, no doubt, some retarding effect upon the flow of water, and prevents a satisfactory comparison of the actual with the

theoretical. It is very clear, however, that 2 inches of rainfall per hour is a moderate estimate as a basis for computing the necessary capacity of the sewers. The new system is making reasonable progress and will advance more rapidly when a larger share of the annual appropriations can be given to the work.

Meanwhile a matter of growing importance is the repair and the incidental modernizing of the old system. The inverts of all the old brick sewers are rapidly wearing out, under the influence of transported sand and gravel. The repairs must be effected by a complete renewal of the invert, with generally a change of shape, and in every case with more durable material, glazed terra-cotta for the smaller sewers, and trap-rock blocks for the larger ones. It will be practicable to effect this with the larger ones by working within the existing sewers, but the smaller brick sewers, and all defective pipe sewers, must be dug up and rebuilt.

The Fourteenth street sewer, $4\frac{1}{2}$ feet in diameter, had a dangerous break in the invert last summer, 160 feet in length. The invert was replaced with trap rock, laid upon a foundation of hydraulic concrete, at a cost of \$3.72 per linear foot. The work was done under many disadvantages and without such appliances as will be used when this class of work is taken in hand. The cost may, therefore, be considered excessive. There are upwards of forty miles of brick invert that must, sooner or later, be replaced with other material, but the average cost will probably be much less than that of the Fourteenth street sewer repair, and fortunately will be distributed over a long interval of time. The completion of the intercepting sewers on Boundary street will extend this time. The sand and gravel brought down by the county streams is the principal agent of destruction of the old brick inverts, and this will be turned aside upon the hard trap-rock invert of the new sewers.

Some idea of the quantity of this material is given by the following statement, for the two years ending June 30, 1881, of the quantity obtained from Tiber sewer:

2,541 cubic yards sand, sold at 60 cents per yard.....	\$1,524 60
402 cubic yards gravel, sold at \$1 per yard	402 00
166 cubic yards gravel, sold at 50 cents per yard	83 00
256 cubic yards miscellaneous stone, sold at.....	354 50
<hr/>	
1,365 cubic yards material, value	2,363 50
Cost of extraction, less cost of plant.....	3,050 00
<hr/>	
Net cost.....	686 50

But to this must be added the wear and tear of the perishing inverts.

THE RECLAMATION OF THE FLATS.

All of these features of the drainage system have the attention of Congress and are cared for in the regular annual appropriations, but an urgent need exists of immediate attention to the outlets of the sewers on the river front, and the reclamation of the marshes through which they must pass. Plans for the new river front were long ago prepared under your direction, and should be urged upon the attention of Congress at the coming session. The elements are simple, and inexpensive. The plans contemplate doing only what the river is doing itself, but too slowly. The work is necessary for the improvement of the river channel, and the danger to the health of the residents of the District may surely be urged as an argument against further delay.

There is nothing difficult or unusual in the work to be undertaken, and there is neither necessity for nor propriety in copying blindly from

any other locality. A sandy flat is forming in front of the city, because the river channel is wider here than is necessary. We have only to fill this sufficiently to change it from marsh to dry land, and protect the border by an embankment that will not wash away. If filled a little above high tide it may readily be kept dry by surface drains and flood-valves, and the embankment will keep off the freshets. This would be the first stage of the work. The filling to a desirable elevation above tide may be cheaply completed afterwards in dredging the river channel, and need not be hurried. The marsh disappears at the first stage of the work.

It is fortunate that we have not to apply the system of the low countries. Holland needs land for agriculture, and finds that the bottom of the sea on her borders makes fertile land. She builds enormous embankments, strong enough to resist the sea, and maintains them under constant supervision at great peril. The outer slopes are strongly revetted, and the inner slopes of grass have dumb watchers in great flocks of sheep that trample down the holes made by burrowing animals. Powerful pumps lift the water from the bottom to the surface of the sea, first throwing out the sea water and then forever after working to keep the land dry.

Holland has no desire to fill the low ground so reclaimed. She has nothing to fill with except water. She wants the bottom of the sea as she finds it. She grows her bread there. If ours were a case of Holland it would be well to reconsider the question of moving the capital.

WATER SUPPLY.

It is hardly of less importance that the additional supply of water, so much needed in the higher sections of the city, should be at once provided. Estimates and plans have been presented from time to time, and it is to be hoped that this matter will receive the attention of Congress. If it be considered that the present supply of 25,000,000 gallons per diem is sufficient, it must be remembered that this amount can only be brought in at an insufficient elevation; and more pumps would be necessary to give the high grounds their share. A quarter of a million dollars invested in meters, with sufficiently prohibitory rates, would reduce the consumption to any desired, and far below any desirable, quantity; but it is hardly advisable.

In the use of pure water we are yet only one-half as high in the scale of civilization as were ancient Rome, Jerusalem, Byzantium. Their water supply was 300 gallons per capita, and it came long distances—from many different sources—in costly aqueducts. We have within easy reach a least flow of a thousand million gallons per day of pure water dashing to waste over the Great Falls of the Potomac. There may be some excuse for the wasted energy of Niagara. No field of enterprise seems great enough or near enough to take it in; but the Potomac has its mission in Washington.

At the present, we need only a commencement—an appropriation sufficient to bring to the city what can already be brought as far as the distributing reservoir, and this is sorely needed.

It cannot be far in the future that a generous supply will flow through the city for every conceivable use. Then the reservoir on Rock Creek will be needed. It will be a beautiful lake of 2,000 acres, with rocky shores and promontories jutting out in every direction. It will have a greatest depth of 140 feet, with all the advantages of this great depth of water, and a capacity of nearly two thousand millions of gallons in

the first three feet of depth. The rocky banks will be their own revetment. The growing timber in the proposed bed of the lake will pay for its own removal. A dam of impervious masonry will close the gorge of the lake, joining rock to rock on either side. The cost will be \$800,000 for the dam and the price of 2,000 acres of steep rocky hillside for the bed of the lake.

For the purpose of the reservoir nothing further would be needed, except legislation prescribing appropriate sanitary regulations.

The causeway of the Seventh street road over Piney Branch would, perhaps have to be raised slightly, but the cost would be insignificant. No other highways cross the site of the reservoir, but a number of local county roads could be taken across by bridge and causeway at shallow points, if thought advisable. A continuous drive around the lake would be constructed in the course of time, and the rest of the park would follow, covering the drainage area of Rock Creek within the District.

RAILROADS.

In compliance with your instructions I have carefully examined into the question of the removal of the present steam railroads from the surface of the streets, within the limits of Washington, and adjusting them to the established grades of the city in such manner as to offer the least obstruction to ordinary surface traffic. In this investigation I have kept in view the general plan and the several requirements prescribed by you. The result is shown in the accompanying plans and estimates, which may be briefly explained as follows:

The Baltimore and Ohio Road now enters the city limits at Boundary street, between Ninth and Tenth streets northeast, crosses Boundary a few feet below grade; passing in a southwesterly direction across Ninth, Eighth, Seventh, Sixth, L, K, I, Fifth, Fourth, Third, and Second, several feet above the grade of each; follows Delaware avenue, on grade, as far as E street northeast, and thence, several feet below grade, across D street and North Capitol to the depot on New Jersey avenue.

This road breaks the grade of nearly every street it crosses within the city limits, and is a serious obstacle to the improvement of the northeastern section of the city. It effectually prevents the improvement of North Capitol street within less than two squares of the Capitol grounds. On the streets which it crosses at grade there is the ordinary danger from that source to the city traffic, and this upon such an important thoroughfare as Massachusetts avenue within a short distance of the Capitol.

The Metropolitan Branch of the same road enters the city limits at Boundary street, between First and Second northeast, and continues down First street, on grade, to Delaware avenue, where it unites with the Washington Branch. Down to this point it is open to the ordinary objections to steam railroads which occupy the greater part of a narrow street at grade, and cross the intersecting streets, also, at grade.

It is proposed to unite the two branches of this road at some point outside the city limits, to be selected by the company, and bring them into the city at Boundary street on the line of Twelfth street east, and on the established city grade.

Thence the road will follow the line of Twelfth street southward, on the grade of the street, to G street, at which point the grade changes so as to enter a tunnel at the north building line of Maryland avenue. Following the line of Twelfth street southward the tunnel continues to Lincoln Square, and passing beneath this square turns into the line of

North Carolina avenue, which it follows to the west building line of Second street east. At this point the city grades fall precipitously to the low grounds, and a short open cut connects the tunnel with an elevated road, which follows the same line of North Carolina avenue to the intersection of New Jersey avenue and E street southeast, crossing this intersection at an elevation of 22 feet above the street grade. Up to this point the line is intended for the exclusive use of the Baltimore and Ohio Railroad, and is designed for two tracks only.

The Baltimore and Potomac Railroad now enters the city limits at the Eastern Branch, between L and M streets south, crosses Fifteenth, Fourteenth, Thirteenth, and Twelfth streets, and thence, in tunnel, along the general line of Virginia avenue and K street south to the west building line of Sixth street, where it emerges upon the grade of K street, and follows the line of this street, conforming approximately to the street grades, to Canal street, thence along Canal street to Virginia avenue, along Virginia avenue to Maryland avenue, and along Maryland avenue to the Long Bridge, conforming to the street grades.

From the western terminus of the tunnel to the Long Bridge, this road is open to the ordinary objections to steam railroads which occupy the greater part of a narrow street at grade, and cross the intersecting streets also at grade. Where the line is upon the avenues there is plenty of space for the tracks and the street traffic also, but the objections incident to being on the street grade are in full force, and complaints are numerous that the avenues are made use of as freight depots, for making up trains, and loading or unloading freight. A change is quite as much needed here as in the case of the Baltimore and Ohio Railroad in the northeastern section of the city.

This road has its depot at Sixth street and Pennsylvania avenue, which is reached by branches from the main line on Virginia avenue and Maryland avenue, down the line of Sixth street, running across the mall and cutting off the Capitol from the Executive Mansion and public buildings. When the privilege of this location was granted to the company the mall east of Sixth street was unimproved, and the objection was not so obvious. At present this improvement is progressing by annual appropriations, and the presence of the depot and tracks is a serious and unsightly obstruction. These branch lines are open to the common objection of occupying the greater part of a narrow street at grade.

It is proposed to deflect this road, where it is in tunnel at Eighth street and Virginia avenue, northward, along the line of Eighth street, continuing in tunnel to E street south, thence along E street to the west building line of Third street southeast. At this point a short open cut connects with an elevated road, which continues on the line of E street to the intersection of New Jersey avenue, crossing at 22 feet above the street grade, coming up alongside the elevated road of the Baltimore and Ohio Railroad at the same elevation. Up to this point this line is intended for the exclusive use of the Baltimore and Potomac Railroad, and is designed for two tracks.

From this point a common line of road with four tracks continues to the Long Bridge, as follows :

An elevated road along the line of E street to Virginia avenue, crossing South Capitol, Delaware avenue, and First streets at a sufficient elevation above street grades. E street is to be widened to 160 feet by taking a narrow strip from Reservation seventeen. This will leave sufficient room for street traffic on either side the elevated road, and the latter will have suitable openings beneath it for the intersecting streets.

From the intersection of Virginia avenue and E street the elevated

and follows the line of Virginia avenue to a point between Four-and-a-half street and Sixth street southwest, where a short open cut follows the same line connects it with a tunnel beginning at the east building line of Seventh street southwest. Street traffic on Four-and-a-half and Sixth streets may be diverted at Virginia avenue to Third and Seventh streets, respectively, one square each, along the line of the avenue, or these streets may be adapted to crossing the railroad by the use of a light iron bridge, and a short approach by ramp, as in similar cases in New York City and elsewhere. All other streets are crossed with sufficient headway under the elevated roads to pass under at their present grades.

From the east building line of Seventh street the tunnel continues along the line of Virginia avenue to Maryland avenue, thence along the west of Maryland avenue to the west building line of Twelfth street, where an open cut commences, following the same line of Maryland avenue to the east building line of Fourteenth street. Here it terminates in the street grade where the present causeway of the Long Bridge commences.

It is proposed to widen this causeway to 160 feet, and raise the grade uniformly out to the bridge abutment, which is to be 15 feet above tide. Roadway and foot-walk will continue on each side of the railroad tracks to within a suitable distance of the abutment, at the same grade, and upon nearing the abutment these roadways will be made to rise gradually above the grade of the tracks and meet upon an arched way over them. This will leave the lower chords of the bridge for the bed of the railways and the viaduct upon the upper chords of the bridge will carry the ordinary traffic of vehicles and foot passengers over the tracks.

A new bridge, to replace the Long Bridge, is indispensable. When the channel of the river is contracted to its proper width by the water-front, scouring will inevitably take place around the piers of the present bridge, and the probability is that the first freshet thereafter would carry it off. It is not of proper construction for the use required of it in the future, and cannot properly accommodate two important railroads and the local vehicular traffic.

It is proposed to construct a new bridge upon the general plan here defined of adequate strength and capacity, and with stone piers at intervals of about 250 feet, sunk to a solid foundation, if practicable to rock, like the piers of the aqueduct bridge. Borings taken many years ago, indicate the probability of finding the rock at a reasonable depth, but are not conclusive as to this. A draw of sufficient size to accommodate the navigation of the river will be needed.

In order to afford the railroad companies an opportunity to negotiate freely for the purchase of sites for the new depots they require, it is thought best to leave to the companies, respectively, the selection of the site, as well as the option of combining in a union depot or erecting separate depots, imposing only the condition that the location and grade of each depot or depots shall be subject to the approval of the Commissioners of the District of Columbia.

After a careful consideration of various routes and plans for accomplishing the purposes here stated, I believe that the plan presented will give the most satisfactory results.

On the part of the District it presents the following advantages:

Two buildings for depots, which now obstruct the growth and improvement of the city, are to be abandoned.

Several miles of track now laid through the streets of the city, as if

through wild lands remote from human habitation, or running on grade across and along populous streets and avenues, are to be put under ground a sufficient depth to enable the street traffic to pass over them, or lifted sufficiently above the grade of the streets to enable the traffic to pass under them, maintaining the present grades of the streets. This is accomplished in the case of every street on the line of each road after its entrance into the city, except two (Four-and-a-half and Sixth), which can be especially provided for, and three others, (Second east, Thirteenth and Thirteenth-and-a-half west), which can be similarly provided for, should they ever require it. The two latter are short streets, only three squares in length, intersected by an open cut near their lower end. They will probably never need a crossing.

The advantage of this disposition of the railroads is not alone the security obtained for the ordinary city traffic. It effects as well a reclamation of the narrow streets, now wholly occupied by the tracks, and prevents the use of the streets as freight depots, or for any purpose other than through transit. The result will be a very great improvement in the value of real estate, now depreciated because of the present state of affairs.

The proposed lines follow, where in excavation, the course of a ridge upon which the surface flow of rain-fall naturally divides. The effect upon the drainage system of the city is therefore a minimum. There is very little interference with the sewers. At Maryland avenue it will be necessary to deflect a 3½-foot diameter sewer to G street, and along G to Fifteenth. The lower portion of the intercepted sewer then becomes available for the drainage of an additional area south of it, and nothing is lost by the change. No other sewers of any importance are intercepted.

The same peculiarity of following the ridge affords the advantage of very short open cuts, connecting the tunnel with the elevated road, the sudden descent of the surface grades at the end of the ridge favoring the transition. Thus the Baltimore and Ohio railroad crosses the line of Second street east, in tunnel, and crosses First street and New Jersey avenue, only one square distant, by elevated road at 22 feet above the grade of New Jersey avenue. The Baltimore and Potomac Railroad crosses the line of Third street east, in tunnel, passes one square above the terminus of Second street and crosses New Jersey avenue, also 22 feet above grade. This prevents interference with the travel of any intersecting street.

The surplus excavation, which will be quite a large amount, will be used for filling Delaware avenue and other streets in the vicinity of the Capitol which cross the line of the old canal and for reclaiming the Potomac flats in the vicinity of the present Long Bridge.

The route proposed appears to offer a number of advantages to the railroad companies.

The right of way is given, throughout, on the line of public streets and avenues.

The lines are short and direct, with easy curves.

On the line of the Baltimore and Potomac Railroad, the maximum cut is 35 feet, and the line is a short one. On the line of the Baltimore and Ohio Railroad, the maximum cut is 35 feet, and on the combined line from New Jersey avenue westward it is only 20 feet. All tunnels will, therefore, be built in open cut, with very little danger of any trouble whatever from underground springs. The material excavated will be a strong clay, with some gravel and perhaps sand. No rock excavation is probable.

This work will present much less difficulty than does the boundary sewer now in course of construction. There the maximum cut is 45 feet, and water is found at a depth of 30 feet, in considerable quantities, with sand and gravel that wash out rapidly from beneath the overlying clay, bringing down the side banks into the excavation.

The shallow cut makes it practicable in the construction of the tunnels to provide readily for unlimited ventilation.

The grades are sufficiently easy, the maximum being 53 feet per mile, much less than has heretofore been found practicable in this class of construction; the ground being exceptionally favorable.

The Baltimore and Ohio Railroad has the longest and most expensive independent line to run, besides providing for connections outside the city limits. The connections of the Baltimore and Potomac Railroad remain as they are now. On the other hand, the Baltimore and Ohio Railroad acquires a valuable franchise in the crossing of the Potomac on the line of the Long Bridge.

Plans of the proposed improvement are transmitted herewith, and detailed estimates have been prepared under my direction, the computations being made by Mr. George H. Bailey and Mr. John F. Alexander.

The following is a summary :

For the Baltimore and Ohio Railroad (construction for two tracks):	
Open cut on Twelfth street northeast, from south building line of G street to north building line of Maryland avenue, 431.41 linear feet, at \$61.75.....	\$25, 839 56
Brick tunnel under Twelfth street northeast, Lincoln square, and North Carolina avenue, from north building line of Maryland avenue to west building line of Eleventh street southeast, 3,253 linear feet, at \$296.63	314, 337 39
Sunken road, protected by parapet walls and iron railing, with beam-tunnel crossings at intersecting streets, on North Carolina avenue, from west building line of Eleventh street southeast to west building line of Second street southeast, 2,988 linear feet of sunken road, at \$131.15.....	391, 876 20
10 linear feet crossings, at \$198.07.....	160, 436 70
Open cut from west building line of Second street southeast to beginning of elevated road, 405 linear feet, at \$61.75.....	25, 008 75
Elevated road (viaduct) on North Carolina avenue and E street south to New Jersey avenue, 520 linear feet, at \$81.50.....	42, 380 00
Total for Baltimore and Ohio independent line.....	959, 878 60

For the Baltimore and Potomac Railroad (construction for two tracks):

Brick tunnel from the intersection of Eighth street and Virginia avenue southeast, under Eighth street and E street, to west building line of Third street southeast, 3,281.83 linear feet, at \$96.63.....	317, 133 13
Open cut on E street from west building line of Third street southeast, to beginning of elevated road, 604.41 linear feet, at \$61.75.....	37, 322 32
Elevated road (viaduct) on E street to New Jersey avenue, 625 linear feet, at \$81.50.....	50, 937 50
Total for Baltimore and Potomac independent line.....	405, 393 95

For the combined roads west of New Jersey avenue (construction for four tracks):

Elevated road (viaduct) on E street, south and Virginia avenue to a point between Four-and-a-half and Sixth streets, southwest, 3,403 linear feet, at \$146.25.....	497, 688 75
Open cut, connecting elevated road with sunken road and beam tunnel at east building line of Seventh street southwest, on Virginia avenue, 1,972 linear feet, at \$75.61.....	81, 053 92
Sunken road protected by parapet walls and iron railing with beam-tunnel crossings at intersecting streets on Virginia avenue and Maryland avenue from east building line of Seventh street, southwest, to west building line of Twelfth street, southwest, 1,393.15 linear feet, sunken road, at \$136.....	189, 468 40

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551.5 linear feet crossings, at \$276.85	\$153,783 77
Open cut on Maryland avenue from west building line Twelfth street, southwest, to Fourteenth street, southwest, 1,171.23 linear feet, at \$75.61	78,556 70
Total for the combined roads west of New Jersey avenue	1,000,551 54

SUMMARY.

Independent line Baltimore and Ohio to New Jersey avenue	959,878 60
Independent line Baltimore and Potomac to New Jersey avenue	405,393 95
Combined line west of New Jersey avenue	1,000,551 54
Grand total	*2,365,824 09

The first two items would, perhaps, suffice for the present, adding the cost of a temporary wooden trestle from New Jersey avenue to Four-and-a-half street, and reserving the more expensive construction of the viaduct until it shall be considered necessary to put the roads under ground west of Four-and-a-half street. The beam tunnels might for the present be omitted and temporary wooden bridges be substituted for them.

The grand total represents a considerable expenditure, but the cost may be urged as an objection to any plan for changing the present location of the tracks, and would be urged with much greater force against any other line than the one selected if it served the purposes intended in this one. No temporizing scheme should be considered at all. It is better to let the tracks remain as they are than shift the nuisance to other localities, only to be shifted again. That the present plan is an economical one appears in this, that it serves the purposes intended at a minimum of cost.

The Fourth avenue improvement in New York City, designed to accomplish precisely the same results, has recently been completed. The length of the line differs but little from that of the one here proposed, yet the cost was about \$6,000,000. It was economically constructed under thoroughly competent and careful management. The lesser cost of the proposed route through Washington is due to the natural advantages of the line selected.

As the cost of the bridge will depend largely upon the depth to which the piers must be sunk to reach a solid foundation, and this has not yet been ascertained, no estimate is given for this. The building of the causeway, having side slopes of earth, will constitute a part of the reclamation of the flats over which it will extend, and will be made from the surplus excavation for the tunnel. The small amount of masonry required for joining the side roads over the tracks at the commencement of the viaduct will rest on piles to be driven before the filling begins.

I am indebted to Mr. Allen Campbell, formerly commissioner of public works, and now comptroller of New York City, for the detailed plans of the Fourth avenue improvement recently completed in New York. These have been carefully studied in connection with the proposed improvement here.

Very respectfully,

R. L. HOXIE,
Lieutenant Engineers, U. S. A.

Maj. W. J. TWINING,
Corps of Engineers, U. S. A.,
Engineer Commissioner, D. C.

* To this will be added a small amount for land damages, depending upon the radius which may be assumed at the curve at Eighth and E streets, southeast; also the cost of widening E street opposite squares 736 and 641, if deemed advisable.

R—REPORT OF LIEUT. F. V. GREENE, CORPS OF ENGINEERS, U. S. A., ASSISTANT TO THE ENGINEER COMMISSIONER OF THE DISTRICT OF COLUMBIA.

ENGINEER DEPARTMENT, DISTRICT OF COLUMBIA,
Washington, September 30, 1881.

MAJOR: I have the honor to submit the following report concerning the streets and roads of the District of Columbia for the fiscal year ending June 30, 1881:

The nature of the work performed is shown in the following statement:

Summary statement of operations and estimates.

No.	Description.	Expended 1880-'81.	Appropriated 1881-'82.	Estimated 1882-'83.
1	Replacement of pavements and improvements of streets and avenues.....	\$299,391 90	\$300,000 00	\$400,000 00
2	Repairs to concrete pavements.....	54,320 95	50,000 00	50,000 00
3	Material for permit work.....	19,724 66	20,000 00	20,000 00
4	Repairs to bridges.....	5,991 12	5,000 00	15,000 00
5	Repairs to macadam roadways.....	14,999 25	5,000 00	5,000 00
6	Current repairs of streets, avenues, and alleys.....	32,184 72	20,000 00	20,000 00
7	Repairs of county roads.....	14,568 20	20,000 00	25,000 00
8	Division of streets, alleys, and county roads office.....	5,600 00	5,600 00	5,600 00
9	Cleaning streets.....	33,124 88	30,000 00	33,000 00
10	Cleaning alleys.....	6,484 90	6,500 00	7,500 00
11	Lighting streets.....	117,221 69	103,325 00	106,250 00
12	Repairs of lamps.....	999 46		
13	Erection of lamps.....	13,219 23	1,000 00	1,000 00
14	Compensation of superintendent of lamps.....	900 00	900 00	900 00
15	Parking commission.....	15,280 06	19,900 00	20,000 00
16	Improving grounds south of Capitol.....	20,000 00		
17	Continuation of survey of the District with reference to the extension of various avenues to District line.....	5,000 00	5,000 00	20,000 00
	Total.....	649,001 00	587,725 00	739,250 00

*The appropriation for this purpose was \$75,000. The balance of \$20,679.05 will be expended under contracts made in June, 1881, and not yet completed.

†Includes materials for sewers laid under permit.

‡Expended on M street bridge.

§Expended on Seventh street road.

||Includes \$1,898.29 for erecting and lighting lamps in alleys under the appropriation of \$2,000 for that purpose.

PAVEMENTS.

The condition of the streets on the 1st of July last was as follows:

Nature of pavement.	Square yards.	Miles.
Concrete (asphalt and coal tar).....	1,077,238	44.92
Stone block.....	448,089	18.18
Rough stone.....	550,456	17.70
Macadam.....	215,330	7.45
Gravel.....	663,455	32.25
Wood.....	380,685	16.70
Total improved.....	3,333,252	135.20
Unimproved.....	1,782,445	96.00

The most important work executed on the streets since the establishment of the present form of government, in 1878, has been the gradual replacement of the worthless wooden pavements. The amount of this

pavement still remaining at various dates since the present Commissioners came into office is as follows :

	Miles.	Square yards.
July 1, 1878	34	790,000
July 1, 1879	27.2	626,742
July 1, 1880	22.1	509,481
July 1, 1881	16.7	380,685

Of the amount last given about 38,000 square yards have been temporarily repaired with gravel, 65,000 yards are included in contracts made since July 1, 1881, and nearly completed, and about 30,000 yards can be replaced with the balance of the present appropriation. There will therefore be on the 1st of next July about 10 miles of streets, containing nearly 250,000 square yards of wooden pavements nearly, if not quite, impassable and dangerous. Although a great many of the principal thoroughfares have now been properly paved, yet many important streets are included in these 10 miles, such as portions of New Jersey, Massachusetts, Pennsylvania, New Hampshire, Rhode Island, and Maryland avenues, and of Fourteenth, Ninth, and P streets. The proper paving of these and other streets now covered with fragments of wood exceeds in importance all other work on the streets, and it is hoped that as much of the current revenues of the next fiscal year as can possibly be spared, after the ordinary expenses of the city are provided for, will be appropriated for this work.

As stated in previous annual reports, all pavements laid since 1878 in this city have been of certain standard descriptions, to wit: a pavement of asphaltic concrete laid on a foundation of hydraulic cement concrete, for streets of moderate grade and uniformly distributed travel; and a pavement of granite blocks laid on a foundation of well-rolled gravel and sand, and cemented with tar and gravel in the joints, for streets of confined travel or steep grades. In addition, one or two squares have been paved each year with compressed asphalt blocks; a lack of certainty as to the durability of this pavement having prevented its use in larger quantities.

The qualities of these different pavements were discussed at length in the last annual report, and it is not necessary to again describe them. Certain minor changes have been made as the result of a large practical experience, but in general terms the character of the pavements has not been altered since 1878. The principal of these minor changes consist in laying granite blocks in the gutters where the stamping of horses in wet weather destroys the asphaltic concrete, in paving the entire strip of two feet next to railroad tracks (which is paid for and maintained by the railroad companies) in granite blocks, and in purchasing all granite blocks in advance, so as to secure a rigid inspection of them. ●

In regard to the cost, the lowest figures were reached in 1879, when a very large amount of asphalt pavement was laid at \$1.47 per square yard. Since that date the price of this pavement has risen to \$1.85, and finally to \$2.07 per yard. In granite pavements the price ruled at about \$2.12 per yard in 1878, and gradually fell to \$1.78 in 1880; it has since risen again, and at present costs about \$2.28 per yard. The asphalt block pavement has varied in price from \$2.37 to \$1.76 per yard. Present contracts make the cost of this pavement about \$1.85 per yard.

The exact amount and cost of all pavements laid in replacement of

wood during the past three years is shown in the following statement. The cost includes setting curb and every other incidental expense, except salaries of district inspectors, which amount to about \$5,000 per year :

Replacement of wood pavements.

Years.	With asphalt.		With granite.		With asphalt block.		Total.	
	Square yards.	Cost.	Square yards.	Cost.	Square yards.	Cost.	Square yards.	Cost.
78 and 1879	104, 022. 52	\$200, 900 18	56, 993. 24	\$129, 657 32	1, 093. 35	\$2 061 61	162, 109. 11	\$333, 219 11
79 and 1880	87, 982. 91	104, 143 17	45, 084. 28	87, 890 42	3, 214. 08	6, 349 61	116, 261. 27	197, 843 10
80 and 1881	75, 469. 32	146, 291 70	47, 742. 67	103, 678 86	.....	.....	123, 211. 99	249, 970 56
Total	247, 454. 75	451, 335 05	149, 820. 19	320, 726 60	4, 307. 43	9, 011 12	401, 582. 37	781, 072 77

On all pavements laid since 1878 the repairs for a period of five years are made at the contractor's expense. On the pavements laid prior to that date the repairs are made by the District. The most important of these are the repairs to the concrete pavements (principally of coal tar), which make up a length of about 30 miles. Under the system which has been gradually established these pavements are kept in thorough repair at all times. The minor repairs and patching are made under a contract let each fiscal year for that class of work. Under this contract skilled laborers are kept at work on some portion of these pavements during a portion of every month in the year except during the winter. The total amount of work executed during the past year was 28,580.70 square yards of repairs, costing \$23,861.27.

In this manner small holes are repaired before they become serious, and the surface is kept in good order. When finally the surface is so worn out that small repairs are no longer sufficient, then the street is resurfaced with a coating of asphaltic concrete similar to that used in new asphalt pavements. The following streets were thus resurfaced last year, viz :

	Square yards.	Cost.
Street southwest, from Four-and-a-half to Eleventh streets.....	10, 802. 22	\$16, 830 48
Street northwest, from Eighth to Thirteenth streets.....	4, 774. 70	7, 638 40

Contracts were also made in May last for resurfacing portions of Pennsylvania avenue, Vermont avenue, F and H streets, amounting to 25,000 yards in all, but owing to the failure of the contractors, the work has not yet been executed.

The annual cost of maintaining all the concrete pavements in the District averaged 8½ cents per square yard for the seven years previous to 1880. For the last year the cost (including contracts not yet completed) was about 9 cents per yard. If constantly attended to in the manner above described, the surfaces can be kept in good order at small expense, and they then give great satisfaction. An appropriation of not less than \$50,000 should be made for this purpose for the next year.

The rough stone pavements are, as a general rule, in bad order. It is an inferior kind of pavement, and the limited appropriation made annually for miscellaneous work under the superintendent of repairs is entirely inadequate to keep them in proper order.

The *macadam pavements* have greatly deteriorated during the six years in which hardly any repairs have been made to them. The pavement on Four-and-a-half street is so completely worn out that a portion of it is now being replaced with granite blocks. The rest of the street will be repaired from the appropriation of \$5,000 made at the last session of Congress for the repair of macadam roadways. A small amount of work, greatly needed, can also be executed with this appropriation on other macadam streets. A similar appropriation should be made for next year.

The *graveled streets* are, as a general rule, in localities where there is not a great deal of travel; they are kept in as good order as is possible with the small appropriation for miscellaneous repairs.

OTHER IMPROVEMENTS.

Of the appropriation of \$300,000 for paving and improving streets, five-sixths of the whole amount was expended in replacing the wood. The remaining \$50,000 was expended as follows:

E street southwest, from Four-and-a-half to Seventh street, grading and laying asphalt pavement.....	\$9,672 43
H street southwest, from Four-and-a-half to Seventh street, grading and laying asphalt pavement.....	10,128 06
Water street southwest, from Twelfth to Thirteen-and-a-half street, laying stone pavement.....	4,825 69
H street northwest, from Fifteen-and-a-half to Sixteen-and-a-half street, replacing rubble pavement.....	7,661 03
I street northwest, from Seventeenth to Eighteenth streets, replacing rubble pavement.....	7,428 09
U street northwest, from Fourteenth to Sixteenth streets, grading, graveling, and sidewalks.....	3,645 24
Fifth street northeast, from D to K, grading and graveling.....	4,213 88
Eighteenth street northwest, from P to S, grading.....	2,034 99
New York avenue, from North Capitol street to Boundary, grading.....	344 37
Total.....	49,953 78

In addition to the above, various streets were improved in front of private property, by parties interested therein, under the permit system, the District furnishing the materials, such as curb, bricks, &c. The total length of these improvements was 11,241 feet or 2.1 miles, and the cost of the materials furnished by the District was \$11,236.63. Portions of various alleys, amounting in all to 1,143 square yards were also paved under the same system.

The filling of the old canal was continued last winter under the special appropriation of \$20,000 made by the United States for that purpose. This work has been carried on each winter for the past three years under special appropriations, accomplishing the double purpose of providing employment for worthy poor during the season when all other work is suspended and of abating the nuisance created by the old canal. The work has now progressed as far as L street, south, a distance of 2,111 feet from the starting point, and has resulted in reclaiming 11½ acres of land to the United States. As a necessary incident to the work, 1,652 feet of sewers have been built to provide for the sewerage which formerly emptied into the canal. There only remains a portion, about 1,000 feet in length, unfilled, at the outer extremity of the canal; which could be completed by a similar appropriation during the coming winter.

CURRENT WORK OF REPAIRS OF STREETS AND ALLEYS.

There are 25 miles of stone pavements, 35 miles of graveled streets, 43 miles of paved alleys, and 260 miles of brick sidewalks—for the ordinary and current repairs of which no special provision is made, except in one general appropriation for current repairs. The estimate submitted for this purpose last year was \$30,000, but the appropriation made for the current year was only \$20,000. This sum is totally inadequate to perform the large amount of work of this character absolutely necessary in the course of the year, and it will be impossible to prevent some of the cobble and gravel streets from getting into very bad order after the rains of next spring. Thirty thousand dollars is the least sum for which this work can be done. It cost \$33,412.46 in 1879-'80, and \$32,161.72 in 1880-'81. The nature of the work performed last year is shown in the statement of the superintendent of repairs (Appendix, Table E). It included 29,700 square yards of cobble-stone laid or relaid, 14,400 feet of gutter stone relaid, 2,560 feet of curb reset, 5,000 square yards of brick sidewalks relaid, 65,000 yards of graveling roadways, and 30 receiving basins built under pumps and hydrants to carry the drippings into the nearest sewer. After every rain large numbers of dangerous holes are reported by the police, and these must be promptly repaired in order to prevent accident. The present force of overseers (and many of the laborers) employed under the superintendent of repairs have been selected from among the employees of several years past, and they are thoroughly efficient and familiar with their duties, and the work performed under them usually costs less than similar work executed under contract, and it is much better done. It is hoped that the importance of this class of work will be recognized at the next session of Congress by making a sufficient appropriation for it.

In regard to the sidewalks, the old municipal ordinance of 1853 required the owners or tenants of property to keep the sidewalks in their front in proper repair; and provided, in the event of their failure to comply with the ordinance, for the performance of the work by public officers, and the assessment of the cost against the property. While this ordinance has never been specifically repealed, the attorney has advised the Commissioners that it is no longer in force and that the sidewalks must be repaired in the same manner as the roadways, *i. e.*, at the expense of the general public. About 95 per cent. of our sidewalks are paved with bricks, a pavement which has little to recommend it, except its cheapness. Of the whole 260 miles of this pavement at least one-tenth is in very bad order. It is a question, however, whether its repair is of as much importance to the city at large as the replacement of the wood pavement on the carriage-ways. In case it should be determined to do any of this work, I have submitted an estimate for repaving the sidewalks of both sides of Pennsylvania avenue from the Capitol to the Treasury, with a permanent pavement of blue stone flagging, or of Portland cement-stone, such as has been largely used in the Capitol grounds and elsewhere. The cost of this work is estimated at not less than \$50,000. Should it be done, a portion of the bricks obtained from that avenue could be used to make temporary repairs elsewhere.

STREET CLEANING.

The paved streets are swept by contract, running for three years (subject to annual appropriations) from July 1, 1880, at the rate of 23½ cents per 1,000 square yards actually swept and cleaned. Of these

streets about 4 per cent. are cleaned daily; 6 per cent. twice per week; 50 per cent. once per week; and 40 per cent. once in two weeks; the streets on which there is most travel being cleaned most frequently. The total amount cleaned during the past year was 110,535,160 square yards, costing \$26,252.10. The contractor uses sweeping machines with revolving brooms.

The unpaved streets are cleaned from time to time by day's labor, under the superintendent of repairs, \$2,029.45 having been expended for this purpose last year. The unusually heavy fall of snow during the past winter necessitated a considerable expense for leveling snowbanks, cleaning crosswalks, and removing ice from the roadways. The ice was broken up by large scrapers supplied by the contractor for street cleaning, and he was paid the actual cost of this work, amounting to \$254.07. The balance of the work necessary for removing the snow and ice was performed by day's labor under the superintendent of repairs, at an expense of \$2,816.37.

The total expenses for street cleaning were then as follows:

Cleaning paved streets.....	\$26,252 10
Cleaning unpaved streets.....	2,029 45
Removing snow and ice.....	3,063 44
Sprinkling macadam streets.....	499 42
Total.....	31,844 41

In addition to salaries of inspectors, amounting to \$1,280.45.

For the present year the appropriation is only \$30,000, and as many streets have been repaved during the past and present year and require more frequent cleaning, it is probable that this appropriation will be insufficient to carry the present schedule of cleaning during the year, and in the spring the streets will have to be cleaned less frequently. For the next year the appropriation should be restored to \$33,000.

ALLEY CLEANING.

The alleys are cleaned at present on the same system, paved alleys by contract at 31 cents per 1,000 square yards for each cleaning, and unpaved alleys by day's labor. During the past year the alleys were cleaned by contract for a fixed sum of \$4,275. The alleys are cleaned once a week during the summer months, and once in two weeks during the winter.

STREET LIGHTING.

The streets are lighted by the Washington and the Georgetown gas companies, under contracts with these companies at so much per lamp per annum. The rate last year was \$28.70 in Washington, and \$32 in Georgetown. The price was reduced by act of Congress, to take effect July 1, 1881, to \$25 per lamp, including all expenses of repairs, lighting, &c. Hitherto the District has paid for extraordinary repairs, such as the destruction of the lantern by storms, &c. The lamps are erected by the District, and cost, at present contract rates for iron castings, about \$21 each. On the 1st of July last there were, on the streets and alleys of the two cities, 4,202 lamps; 162 having been erected during the past year. With the appropriation of \$1,000 for erection of lamps during the present year, about 48 lamps will be erected; so that there will be 4,250 lamps to be lighted next year; at \$25 each, the total cost will be \$106,250. During the past year the cost of street lighting was \$117,231.69, and during the present year the appropriation was \$103,325.

The act of June 4, 1880, appropriated \$2,000 for erecting and lighting lamps in alleys. Under this appropriation 75 lamps were erected in the alleys, where they are of great service to the police in following criminals.

COUNTY ROADS.

The principal work done in the county during the past year was the thorough repair of Seventh street road, which is the main entrance to the city from the north. This work began at Boundary street; and at a distance of 1,437 feet the entire road-bed was picked up and relaid with macadam, the curbs set, and sidewalks repaired. Beyond this the road was repaired by picking up the old macadam, rebreaking and adding fresh metal in the central portion of the road 18 feet wide, and in graveling the road on each side of the macadam. The work was done in the most thorough manner, by day's labor. It was stopped by bad weather in the latter part of November, at which time the work had progressed as far as Summy's Hill, a distance of 9,287 feet. The cost of this (including an accumulation of macadam metal for further work) exhausted the appropriation of \$15,000 made for that special purpose. This year the work was resumed on July 5, and continued until September 29, at which date it had progressed as far as the foot of the hill leading to Brightwood, a distance of 4,730 feet from the point of beginning. No special appropriation having been made for the year, the cost (amounting to \$7,750) was paid from the appropriation for general repair of county roads. Next summer the work can be continued as far as Brightwood.

No new roads were constructed during the past year. The ordinary repairs of the roads (about 100 miles in length) other than Seventh street were made from time to time as required, at a total cost of \$268.20, or \$172 per mile. Most of the roads are now in fair condition; and in repairing them an effort is made, as far as the funds will permit, to make the repairs of a permanent character by substituting broken stone (gathered and broken during the winter) for the ordinary gravel, which contains so large a proportion of clay and earthy matter; and in repairing small culverts and drains stone masonry is used in place of wooden abutments.

During the present year the appropriation is \$20,000, which is only one-third of the estimate submitted as necessary for this purpose. Owing to the large expenditure for the Seventh street road there will remain only about \$12,250 for the other roads. This amount is not sufficient, and in the spring the roads will probably deteriorate to some extent. For the next year the appropriation should be not less than \$20,000, in order to carry on the work on Seventh street road and keep the other roads in proper repair.

SURVEY OF THE DISTRICT.

The careful survey of the District, made by the Coast Survey, the District paying the current expenses, which was begun in July, 1880, has now progressed so far that the triangulation is complete and the topography of sheet No. 1, embracing an area of about eight square miles, will be completed during the month of October. The field work costs the District about \$700 per mile; and the territory adjacent to the city, of which maps are now urgently needed, embraces about 35 square miles. The appropriation for the current year is \$5,000, but in order to prosecute the work more rapidly a larger appropriation will be necessary.

The object of this survey is to obtain accurate maps of a sufficiently large to make proper plans for the extension of the streets and avenues in the rapidly growing portion of the county just north of the city. The streets hitherto laid out in that section do not conform to each other or to the general plan of the city, and an alteration in their line will be demanded as soon as they are thickly built upon. It is very important that this error should be avoided in streets to be laid out hereafter.

ESTIMATES FOR THE COMPLETION OF STREETS.

The act establishing the present form of government requires the Commissioners to transmit annually to Congress estimates of the amount necessary to defray the expenses for the next fiscal year; and these estimates "a statement showing in detail the work proposed to be undertaken by them during the fiscal year next ensuing, and the estimated cost thereof." The act further provides that after Congress approves these estimates it shall appropriate the amount of one-half thereof, and that the other half shall be raised by a certain uniform tax upon the property and privileges.

There being no provision for assessing any portion whatever of the cost of street improvements upon the abutting property, petitions have immediately come in in large numbers praying for improvements of this character. The number of these petitions presented during the last three years and now on file in this office amounts to 726, and they include nearly every street in the city. As previously stated, however, the Commissioners limited their work on the streets mainly to replacing worthless wooden pavements, which alone has absorbed the revenues available for street work; and hence the greater part of the petitions have not been acted upon.

In order to prepare a basis on which to make the estimates and statement of work above referred to, I have carefully examined the condition of every street within the limits of the two cities, excluding the unsettled portions east of Lincoln Park, south of N street south between the White Lot and the Observatory. The necessary measurements have been made and the estimate calculated in detail of the work at present prices of putting all the streets in proper order, as petitioned for. This schedule is submitted herewith (Appendix, Table C), together with a map showing the present condition of the streets and the improvements needed. It comprises work on 173 streets or parts of streets in the city, in addition to the suburban streets just outside the limits.

The most important work is the replacement of wood pavements amounting to 294,757 square yards, and estimated to cost \$633,600.

Next in importance is the replacement of a portion of the rough unsuitable cobble or blue rock pavements in the heart of the city—as 4½, 6th, 10th, and 14th streets adjacent to Pennsylvania avenue. The amount of this work is 99,713 square yards, estimated to cost \$259,847.15.

Next in order is the replacement of the macadam, where it was unfinished or improperly laid prior to 1875. New York avenue, east of 5th street, 11th street southeast, and the western portion of I street are samples of this. The whole amount is 80,939 square yards, estimated to cost \$174,018.85.

All of this work is replacement of pavements already laid, but worn out or unserviceable.

Of new work there is required a certain amount of paving on streets

of heavy travel, such as Virginia avenue, F and H streets south, and Vermont avenue, Q, and other streets north. The total amount is 118,000 square yards, estimated to cost (with grading and sidewalks) \$365,522.10. Less important streets are estimated for a gravel roadway, together with curbs, gutters, and sidewalks. The number of streets partly built upon but wholly unimproved is very large, amounting to 985,188 square yards, and the estimated cost of improvement is \$963,919.80.

I have also estimated for relaying the sidewalks on Pennsylvania avenue, \$51,397.20, and for grading and graveling the streets of recorded subdivisions adjacent to the city, \$194,230.

The grand total of cost of these improvements is \$2,582,562.65. This is the work for which petitions are on file, and which is necessary to complete the streets of the city and its suburbs. It is apparent at a glance that its cost far exceeds the amount of revenue which can be devoted to the streets for several years. With an annual appropriation of \$300,000 (as for the past three years) it will be more than eight years before this work can be completed. If a law were passed by which abutting property could be made to bear some portion of the cost of street improvements by which its value is immensely enhanced, much more work could be done in each year; and the readiness of property-holders to share the expense would assist the Commissioners in selecting what work is to be done from among the immense quantity asked for. Without such assessments the general revenues cannot replace the balance of wood pavements alone in less than two years.

I respectfully submit this schedule to your judgment in order that you may select the work to be executed during the next fiscal year.

Very respectfully, your obedient servant,

F. V. GREENE,
First-Lieutenant, Engineers.

Maj. W. J. TWINING,
*Corps of Engineers, U. S. A.,
Engineer Commissioner D. C.*

APPENDIX X 1.

REPORT OF THE CHIEF CLERK, ENGINEER DEPARTMENT.

ENGINEER DEPARTMENT, DISTRICT OF COLUMBIA,
Washington, September 30, 1881.

MAJOR: I have the honor to submit the following report of work performed by the clerical force of this department during the fiscal year ending June 30, 1881:

Number of communications received, briefed, and recorded in letters received..	4,538
Upon these, 6,038 indorsements have been made and 1,918 reports submitted.	
Number of orders and letters written	2,763
Number of copies of contracts drawn and recorded	255
Number of permits (gas, sewer, water, and miscellaneous) issued	2,537
Number of vouchers prepared and forwarded	708
Number of bills prepared and forwarded	2,088
Number of special assessments revised	143

A consolidated summary statement of the operations of the department, showing the expenditures for the past fiscal year and the estimates for the ensuing fiscal year, is submitted.

The accompanying tabulated statement shows the condition of the revenues and expenditures of the several public markets during the time covered by this report.

The Northern Market, formerly upon square No. 446, was abolished by the Commissioners on July 1, 1881, and the ground of that square devoted to school purposes.

The administration of the affairs of the several markets is very good, and they are in a prosperous condition.

The act of Congress "providing for the settlement of all outstanding claims against the District of Columbia, and conferring jurisdiction on the Court of Claims to hear the same," has thrown upon this department a large amount of work without making any provisions whatever to meet the demand. The suits brought against the District under the provisions of this act arose on account of claims based upon contracts with the old levy court; out of contracts made by the late board of public works, and extensions thereof made by the Commissioners of the District since June 20, 1874, and all claims for work done by the direction of the Commissioners, and accepted by them prior to March 14, 1876.

A majority of the suits brought are for claims arising out of contracts with the late board of public works, and almost in every such case the claimant makes a call through the Court of Claims for all papers among the records of this department which relate in any degree to his case, while in others specific papers are wanted. In many cases two and three calls are made. In every suit filed the Attorney-General, whose duty it is to make the defense, calls for a complete history of each case. In answering the first and last class of cases a long, laborious search of the records of the late board of public works is carefully made and the data relating to each case collated, while in the second class of cases less time and labor is consumed.

A large amount of work has been performed in the department which cannot well be enumerated, but requires a great deal of care, attention, and time.

To meet the demands of the Court of Claims and maintain the large amount of current routine work of the department during the busy season, has entailed upon the force extra exertions.

The work of the department is well in hand, and the records in a good state of preservation.

Very respectfully, your obedient servant,

JOSEPH C. ROCK,
Chief Clerk.

Maj. WM. J. TWINING,
*Corps of Engineers, U. S. A.,
Engineer Commissioner D. C.*

Consolidated summary statement of operations and estimates.

Description.	Expenditures to June 30, 1881.	Estimated for 1882-'83.
Engineer department:		
Salaries.....	\$28,806 35	\$28,510 00
Temporary writers and draughtsmen.....		1,800 00
Contingent expenses.....	4,973 59	5,000 00
Water department:		
Office and contingent expenses.....	140,788 74	14,139 00
Employees, fuel, material, &c., for high service.....		16,718 75

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 229

Consolidated summary of operations and estimates—Continued.

Description.	Expenditures to June 30, 1881.	Estimated for 18 2-83.
Water department—Continued.		
Pipe distribution, to high and low service, and laying new mains		\$35,582 75
Interest and sinking fund on water-stock bonds		44,610 00
Cleaning and repairing lateral sewers and basins	\$15,416 38	30,000 00
Lateral sewers, construction of	14,900 00	30,000 00
Boundary-street sewer	* 79,286 40	100,000 00
Auxiliary sewer in Rock Creek district		70,000 00
Public bay-scales	52 90	500 00
Dredging James Creek Canal		5,000 00
Markets:		
Compensation of market-masters	4,930 32	5,400 00
Contingent expenses	4,447 16	1,500 00
Cleaning tidal sewers	2,962 31	3,000 00
Material for permit work:		
Sewers	6,220 56	10,000 00
Surface	13,504 10	20,000 00
Division of sewers and drains		2,480 00
New York avenue sewer and outlet	28,000 00	
Dredging channel across flats and completing canal outlet	8,443 14	
Pumps	2,997 83	3,500 00
Replacement of pavements and improvements of streets and avenues	299,391 90	400,000 00
Repairs to concrete pavements	154,320 95	50,000 00
Repairs to bridges	15,991 12	15,000 00
Repairs to macadam roadways	\$ 14,999 25	5,000 00
Current repairs of streets, avenues, and alleys	32,164 72	30,000 00
Repairs of county roads	14,568 20	25,000 00
Division of streets, alleys, and county roads office	5,600 00	5,600 00
Cleaning streets	33,124 86	33,000 00
Cleaning alleys	6,484 90	7,500 00
Lighting streets	117,231 69	106,250 00
Repairs of lamps	999 46	
Erection of lamps	|| 3,219 23	1,000 00
Compensation of superintendent of lamps	900 00	900 00
Parking commission	15,280 06	20,000 00
Improving grounds south of the Capitol	20,000 00	
Continuation of survey of the District with reference to extension of various avenues to District line.	5,000 00	20,000 00
Total	984,956 12	1,146,670 50

* \$96,295.09 charged to appropriations for 1878-79, and 1879-80.

† The appropriation for this purpose was \$75,000. The balance of \$20,679.05 will be expended under contracts made in June, 1881, and not yet completed.

‡ Expended on M-street bridge. § Expended on Seventh-street road.

¶ Includes \$1 898.29 for erecting and lighting lamps in alleys, under the appropriation of \$2,000 for that purpose.

Summary statement of various District markets, 1880-81.

Class of stall.	Northern market.		Eastern market.		Western market.		Georgetown market.	
	No. of stalls in market.	Monthly rent.	No. of stalls in market.	Monthly rent.	No. of stalls in market.	Monthly rent.	No. of stalls in market.	Monthly rent.
Butcher	35	\$4 67	18	\$4 50	21	\$4 50	20	\$2 16
Bacon	30	4 67	6	4 00	13	9 00		
	13	2 00			2	3 75		
Hucksters	16	2 50			2	7 50		
	31	3 00	38	3 00	7	3 00	20	2 16
	10	3 50			26	6 00		
Butter	3	2 50						
	3	3 00	8	4 00	7	3 00	14	2 16
	3	3 50						
	2	2 00						
Fish	2	2 50	3	3 00	2	3 00	4	
	2	3 00			3	6 00		
	3	3 50						
Miscellaneous	24	3 00	7	4 00	13	6 00	6	2 16
Receipts		5,178 79		2,811 90		4,436 32		1,512 76
Expenditures		3,820 09		2,372 24		2,051 92		1,386 75

* Sold annually.

APPENDIX X 2.

WATER REGISTRAR'S OFFICE, DISTRICT OF COLUMBIA,
September 30th, 1881.

SIR: I have the honor to make the following report of the operations of the department from July 1, 1880, to June 30, 1881.

WATER MAINS.

1st. The total length of water-mains laid in the District of Columbia is 927,777½ feet, or $175\frac{3117\frac{1}{2}}{5280}$ miles.

2d. Laid by the United States Government: 30-inch, 12-inch, 6 and 4 inch mains, 93,750 feet, or $17\frac{3380}{5280}$ miles.

3d. Laid by the late corporation of Washington: 6 and 4 inch mains, 55,000 feet, or $10\frac{3900}{5280}$ miles.

4th. Laid by the District of Columbia: 36, 30, and 20 inch mains. 31,639 feet, or $5\frac{5230}{5280}$ miles.

5th. Laid by the water department since its organization to June 30, 1881: 12, 6, and 4 inch mains, 751,179½ feet, or $142\frac{1118\frac{1}{2}}{5280}$ miles.

Of the above there were laid since its organization to June 30, 1881: 12, 6, and 4 inch mains 751,179½ feet, or $142\frac{1118\frac{1}{2}}{5280}$ miles.

Of the above there were laid since July 1, 1880, to June 30, 1881, 3,709 feet, of which the following is a correct list:

Streets.	Streets between.	Diameter.	Length.
		<i>Inches.</i>	
Massachusetts avenue.....	Sixteenth and Seventeenth streets west, north side.....	6	528
Eighth street west.....	B and C streets south, center.....	6	432
K north.....	Thirteenth and Fourteenth streets west, north side.....	6	456
Jefferson street.....	Connecticut avenue and Nineteenth street west, center..	6	486
S street.....	Seventh and Eighth streets west, center.....	6	264
N north.....	Nineteenth and Twentieth streets west, west side.....	6	182
Kingman's Place.....	Thirteenth and Fourteenth streets west, center.....	6	375
N north.....	Connecticut avenue and Nineteenth street west, south side.	6	324
R north.....	Sixteenth and Seventeenth streets west, center.....	6	510
Twenty-third west.....	Virginia avenue and E street north, north side.....	6	252
Total.....			3,709

FIRE-PLUGS.

There are in the District of Columbia 825 fire-plugs, nearly all of the McClelland patent. Three have been erected from July 1, 1880, to June 30, 1881, of which the following is a correct list:

Southwest corner Eighth and B streets, southwest.

Northwest corner Sixteenth and R streets, northwest.

Northwest corner Ninth and B streets, northwest.

One new fire-plug has been erected in the place of an old one, at the northeast corner of Thirteenth and C streets, northwest. Four fire-plugs have been moved to new curb-line, at the following places:

Fifth and M streets, northwest.

Fourth and Q streets, northwest.

Iowa Circle, northwest.

Louisiana avenue between Four-and-a-half and Sixth streets, northwest.

Two hundred and eighteen repairs have been made to fire-plugs in

the District of Columbia. The plugs have been flushed about 7,250 times, and oiled about 24,000 times.

STOP-VALVES.

From July 1, 1880, to June 30, 1881, there have been inserted 8 stop-cocks and boxes, of which the following is a correct list:

Size.	Location.
One 2-way, 6-inch	Northwest corner of Massachusetts avenue and Sixteenth street, northwest.
One 4-way, 6-inch	Center of Eighth street, north side, C street southwest.
One 2-way, 6-inch	Center of Eighteenth street, corner of Jefferson street, northwest.
One 4-way, 6-inch	Center of Nineteenth street, corner of Jefferson street, northwest.
One 4-way, 6-inch	Center of Eighth and S streets, northwest.
One 2-way, 6-inch	South side of P street, center of Kingman's Court, northwest.
One 2-way, 6-inch	Center Connecticut avenue and N street, northwest.
One 2-way, 6-inch	Southeast corner of Nineteenth and N streets, northwest,

Sixteen water-main stop-cocks have been raised and lowered.

Twenty-one repairs have been made to stop-cocks.

Stop-cocks have been oiled 3,800 times.

BRANCHES.

There have been inserted since July 1, 1880, to June 30, 1881, nine six-inch T branches.

HYDRANTS.

There are in use in the District of Columbia 816 hydrants. Twenty-three new hydrants have been erected in place of old ones; 12 new hydrants have been erected at new locations, and 4 hydrants have been taken out during the year.

NEW HYDRANTS ERECTED IN PLACE OF OLD ONES.

Virginia avenue, corner of Four-and-a-half street, southwest.

North Capitol and C streets, northeast.

South Carolina avenue, corner of Second street, southeast.

North Capitol street, between G and H streets, northeast.

Delaware avenue, between B and C streets, northeast.

New Hampshire avenue and G street, northwest.

Cherry alley and Water street, west.

First and L streets, northwest.

Third and L streets, southeast.

Fifth and Ridge streets, northwest.

Sixth street, between Pennsylvania and Missouri avenues, northwest.

Seventh street, between T and U streets, northwest.

Thirteenth and D streets, northwest.

Thirteenth and E streets, southwest.

Thirteenth and G streets, northwest.

Twenty-first and H streets, northeast.

Twenty-second and I streets, northwest.

Twenty-third and H streets, northwest.

Twenty-sixth and I streets, northwest.

Thirty-second and O streets, west.

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I street, between Twenty-first and Twenty-second streets, northwest.
N street, between Fourth and Fifth streets, northwest.
H street, between North Capitol and First streets, northwest.

NEW HYDRANTS ERECTED IN NEW LOCATIONS.

Marion street, between P and Q streets, northwest.
B street, between Third and Fourth streets, northeast.
E street, between Sixth and Seventh streets, southeast.
F street, between Second and Third streets, southwest.
Second street and Virginia avenue, southwest.
Second and C streets, southwest.
Third and O streets, northwest.
Third street, between I and K streets, northwest.
Eighth street, corner Boundary, northwest.
Eleventh street, between V and W streets, northwest.
Bates' alley, between Sixth and Seventh and G and H streets, northwest.
Delaware avenue and H street, northeast.

HYDRANTS TAKEN OUT.

Sixth and O streets, northwest.
Seventh and I streets, northeast.
Thirteenth street, between E and F streets, northwest.
N street, between Fourth and Fifth streets, northwest.

There have been 247 repairs made to hydrants in the District of Columbia during the year.

TAPS.

From July 1, 1880, to June 30, 1881, there have been made 617 taps, consisting of $\frac{5}{8}$, $\frac{3}{4}$, and one inch in diameter.

FOUNTAINS.

Seven repairs have been made to public fountains.

SERVICES.

2,100 services measured and examined.
48 services repaired.
70 services lowered.
59 services run for new places.
16 services run in place of old ones.

LEAKS.

Seventy-one leaks in mains have been repaired during the year.

PUMPS.

There are 464 pumps in use in the District of Columbia, 2 of which have been erected during the year, at the following localities:
Ninth street, extended above Boundary street.

Twenty-second street and Virginia avenue, northwest.

Five pumps have been moved to new curbs, one lowered to grade, and twelve pumps have been condemned during the year.

Twenty-one wells have been cleaned out, and 407 repairs have been made to the different pumps.

PUMPS MOVED TO NEW CURB.

Tenth street, between O and P streets, northwest.

Seventh street, corner Massachusetts avenue, northeast.

Sixth street, between P and Q streets, northwest.

Sixth street, corner H street, northwest.

Sixth street, corner G street, northwest.

PUMP LOWERED TO GRADE.

Second and I streets, southeast.

PUMPS CONDEMNED.

Second and B streets, northeast.

Four-and-a-half and N streets, southwest.

Sixth and E streets, northwest.

Seventh street, between L and M streets, southeast.

Twelfth and G streets, southeast.

Thirteenth street, between N and O streets, northwest.

Fourteenth street, corner L street, northwest.

Fourteenth street, corner S street, northwest.

Fifteenth street, corner East Capitol street, northeast.

Boundary street, corner Eighth street, northwest.

Delaware avenue, corner H street, northeast.

Hillsdale pump, county.

Statement showing the amount of money collected by the collector of taxes for the Water Department from July 1, 1880, to June 30, 1881.

Water-tax	\$26,809 53
Water-rent	109,679 58
Water-taps	1,851 00
Water-permits, &c	1,908 22
	<hr/>
	140,248 33

Expenditures of the Water Department from July 1, 1880, to June 30, 1881.

Office rolls	\$10,830 00
Contingent expenses of office (printing, &c.)	1,141 10
Laborers' rolls	23,692 55
Material, &c	29,080 69
Refunded	290 24
Erection of standpipe	1,580 39
Interest and sinking fund	74,123 77
	<hr/>
	140,738 74

WATER TAX.

The total assessment for water mains laid between July 1, 1880, and June 30, 1881, amounts to \$7,042.70.

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Statement showing amount of outstanding water-main tax and interest on June 30, 1881.

Water-main tax.....	\$45, 612 22
Interest.....	16, 677 64
Total	62, 289 86

Water has been introduced into 664 new places during the year.

The number of houses using water for domestic and miscellaneous purposes on June 30, 1881, was 18,313.

Estimate for the expense of the Water Department for the fiscal year ending June 30, 1883.

For salaries of water registrar, five clerks, inspector, messenger, and inspector and tapper of mains	\$13, 720 00
For contingent expenses.....	1, 500 00
Engineers and firemen, coal, material, &c., for high service, Washington.	8, 907 50
Engineers and firemen, coal, material, &c., for high service, Georgetown.	7, 811 25
For repairing, examining, and flushing fire-plugs, repairing hydrants, and oiling stop-cocks, material, fire-plugs, hydrants, &c	7, 175 75
For repairing mains, turning off and on water, tapping, taps, material, &c.	10, 020 00
For laying new water-mains.....	10, 000 00
For repairing pumps, digging wells, material, and blacksmithing	3, 391 00
For carriage and driver	900 00
	63, 411 50

Before closing my report, I wish to urge upon Congress, through you, the very great necessity of its taking steps, at the approaching session, to improve the water supply.

Everything concerning the Water Department is in the most satisfactory condition except the want of an ample supply of water.

The rents are paid up closer than they have ever been in any previous year, and the arrearage tax on mains is being satisfactorily collected. The water-takers are more prompt in complying with the laws and regulations; and the plumbers, who have as a class been found much fault with, I am happy to state readily comply now with the law and regulations, with a few exceptions, and give the department no trouble.

The department has had considerable increased work in trying to have the stop-cock and street-washer boxes which project above the sidewalks lowered to the grade of the pavement. The majority of the property-owners act promptly after being notified to have their boxes lowered. A few make a fight about the matter, but by kind persuasion have finally given in.

It is difficult to estimate for certain expenditures of the department in advance. For instance, we cannot tell how many of the mains may need repair. This depends altogether upon the severity of the winter. We would no doubt have had a great deal of this kind of work to do last winter but for the timely snow which afforded protection to them. During the "comprehensive improvement" by the board of public work a number of streets were lowered and the water-mains in said streets were not lowered to correspond with the grade, consequently they are in danger of bursting in the freezing weather. The estimate for laying new mains can only be approximated, as it altogether depends on the application of parties who are interested in having them laid. As the law assesses all property which borders on water-mains one and one-quarter cents per square foot, and we never lay mains now until the assessment is paid in advance, this will not make much difference.

The department has experienced much trouble the present year about the limited supply of water, and has done all in its power to correct the

trouble. It thought the supply would be increased for domestic use by the shutting down of the public fountains, and a request to Colonel Rockwell, Commissioner of Public Buildings and Grounds, to shut them off was gracefully complied with by him, and the experiment proved of considerable benefit. At present there is a very large number of elegant residences being erected which will require a large supply of water, and unless some action is promptly taken to give this increased supply, persons will feel discouraged and the city will fail to be improved by parties who are willing and anxious to build, but are discouraged by the great scarcity of water, especially on the higher points of the city. Mr. Henry Larman, the inspector and tapper of mains, calls my attention again to the importance of inserting a 30-inch stop-cock for a blow-off near the intersection of New Jersey avenue and D street, northwest, for the purpose of flushing the large mains to clean out the mud which accumulates in them. I consider Mr. Larman a very practical man, and consequently attach importance to any recommendation which he may make.

In the present limited supply of Potomac water I think it would be well to preserve for use, in the case of an emergency, all the pumps the water of which has by chemical analysis proved to be of a pure and healthful quality which are now in existence. Besides, there are quite a number of poor persons who cannot afford to buy ice, and the pump-water for drinking purposes affords them great comfort in the sweltering days of midsummer.

I do not think it advisable to sink any new wells, for the reason of the extensive system of sewerage, except, perhaps, in very special instances.

There is one more thing I wish to call attention to while I am on this subject; that is, the great importance of the police being instructed to keep vigilant watch over pumps, for the reason that we often have to repair them as many as three or four times within a month, owing to the fact that mischievous boys throw gravel and stones down them, and we sometimes take out as many as a bucketfull. Two or three arrests and convictions for this outlawry will suffice, I think, to correct this trouble.

I will add that the clerks and employes of the department continue to give satisfaction, and are always prompt, reliable, and efficient. The inspector and tapper of mains gives increased evidences of his efficiency, and is frequently called out at night, in all kinds of weather, to superintend the repairs of leakages in mains to prevent the wastage of water and destruction of property, which, added to his regular day work, makes his office an arduous one, but he is equal to the emergency and answers every call made upon him without a murmur.

I am, sir, yours, very respectfully,

THOS. C. COX,
Water Registrar.

Maj. WILLIAM J. TWINING, U. S. A.,
Engineer Commissioner of the District of Columbia.

APPENDIX X 3.

REPORT OF THE SURVEYOR.

SURVEYOR'S OFFICE,
Washington, D. C., September 30, 1881.

SIR: I have the honor to submit report of the operations of this office for the fiscal year ending June 30, 1881; so much as pertains to the period

prior to my reappointment (April 4, 1881) being obtained from the files of my predecessor;

Survey for property-holders.....	564
Subdivisions recorded and plats issued.....	96
Miscellaneous plats and tracings.....	84
By order the Commissioners District Columbia:	
Surveys streets, roads, and alleys.....	15
Surveys of lots.....	20
Reports upon streets, roads, and alleys.....	36
Reports upon miscellaneous subjects.....	12

There has been prepared, by my predecessor, a map, in duplicate, "of that part of the city of Washington called Georgetown, showing new names of streets and the location of buildings and their numbers, under the new system of enumeration."

Plats of all current subdivisions, city and county, are regularly duplicated, and areas computed for the information and guidance of the assessor's office.

I respectfully ask your attention and favorable consideration relative to the status of this office, with a view to its re-establishment upon a more reasonable and equitable basis. Greater public interests and responsibilities attach to few offices of the District, and none, perhaps, less fortunate in executive recognition.

I have the honor to be, sir, very respectfully, your obedient servant,
WM. FORSYTH,
Surveyor District of Columbia.

Maj. W. J. TWINING,
Corps of Engineers, U. S. A.,
Engineer Commissioner District of Columbia.

Estimate of expenses for conducting the office of the surveyor of the District of Columbia, for the year ending June 30, 1883.

Salary of surveyor.....	\$2,400 00
Salary of clerk.....	1,400 00
Salary of messenger.....	600 00
Binding land records, mounting maps, and for books, stationery, fuel, and other contingencies.....	400 00
Total.....	4,800 00

Respectfully submitted.

WM. FORSYTH,
Surveyor District of Columbia.

APPENDIX X 4.

REPORT OF THE PARKING COMMISSION.

WASHINGTON, D. C., November 10, 1881.

MAJOR: The parking commissioners have the honor to submit the following report for the year ending June, 1881:

During the year 2,139 trees have been added to the number on the streets, and 556 replanted. These latter have been used to fill vacancies caused by storms, accidents by runaway horses, wilful destruction by malicious persons, and rigorous weather. Three thousand and fifty

large-sized tree-boxes have been procured, and 1,900 of the second size for newly-planted trees.

Among other items, 58,000 stakes have been used for supporting the boxes, 7,500 pounds of material for strapping, and 135 kegs of nails in repairing and renewing boxes.

One hundred and fifty-five old, decayed, and useless trees have been removed, and 2,075 holes prepared for planting.

The annual expenditure essentially necessary for the ordinary care of the 50,000 trees in the city has now become so large that only a small amount of the annual appropriation allotted the parking commission is available for the extension of tree-planting.

The maintenance of the boxes for protection of the trees constitutes a large item of expenditure. Over 30,000 of the boxes either have been renewed or stand in need of renewal, and every year adds to the list. An effort has been made to dispense with the boxes in the case of the older trees, but it was found impracticable to preserve the trees from injury after removal of the boxes, so that they had to be again protected. It is contemplated to substitute a cheap guard which will protect the main stem of the tree from the gnawing of horses, and from the chopping with hatchets and peeling with knives in the hands of those who find a malicious amusement in destroying public property, which, so far as regards the shade trees, they seem to be able to do without let or hindrance. If a suitable guard can be adopted, it will, to that extent, diminish the expenditure for protection.

Consequent upon the improvement which curtails the width of the streets and removes the curb line to a greater distance from the building line, many trees, formerly on the curb line, are now included in the parking, and, in some instances, they are left in the sidewalk, where they are palpable obstructions in the public thoroughfare; but, whether in the parking or the sidewalk, they are mostly situated so as to be injurious to the newly-planted trees, and they should be removed at once.

Street trees are subjected to many casualties and unhealthy influences which are in a great degree unavoidable. They are particularly liable to injury from storms on account of the early removal of all branches from the lower portion of the main stem; this pruning is unavoidable in order that branches may not interfere with the proper use of the streets and sidewalks, but it weakens the body of the trees, and deprives them of the power of resisting the storms, as compared with trees whose natural growth is not disturbed by manipulations; hence the necessity of a strong protecting box—strong enough to support the plant for the first two or three years of its growth; but after it ceases to afford support it is of no further value except as a guard to the stem from depredations, as remarked above. With a view to lessen the chances of injury from gales, recourse is had to pruning or thinning out the tops during summer, thus allowing the wind to pass through the branches and measurably saving the trees from being uprooted by storms.

Again, insects are more prevalent and more injurious on city trees than on those situated in more exposed locations. The shelter and warmth of the city favor their increase, and although various remedies have been suggested and tried, looking to their eradication, few have been of practical value.

To destroy all kinds of scale insects on the branches, no remedy has been found so efficient as that of covering them with a coating of common lime-wash. Many suggestions have been given for the destruction of caterpillars, and if the operation was confined to a few trees the remedies would be found efficient; but when multiplied by thousands it is

found that the cost becomes altogether beyond the appropriations available for this purpose; therefore the only practicable mode is that of removing the young insects before they have extended their webs over the branches, and this is accomplished so far as means will allow, but it is only partially performed on account of the amount of labor required.

Leakage from gas-pipes is another evil which destroys many trees. This cannot be foreseen, even if it could be prevented.

Notwithstanding all drawbacks, there is no city on this continent so well furnished with healthy shade trees, and as to cost of planting and care, we may safely challenge comparison, for a similar result, with any city in the world.

Respectfully submitted.

WM. R. SMITH,
JOHN SAUL,
WILLIAM SAUNDERS,
Parking Commission.

Maj. W. J. TWINING,
*Corps of Engineers,
Engineer Commissioner, D. C.*

APPENDIX X 5.

REPORT OF THE SUPERINTENDENT OF GAS AND LAMPS.

ENGINEER'S OFFICE, DISTRICT OF COLUMBIA,
Washington, September 15, 1881.

SIR: I have the honor to submit my report of the operations of this office and expenditures incurred from June 30, 1880, to June 30, 1881, showing a total expenditure of \$123,337.80.

The street lamps of Washington and Georgetown have been lighted during the past year 2,200 hours. Sixty extra hours were burned in the month of March, owing to the inaugural ceremonies, and the great influx of strangers into the city made it necessary to keep the streets lighted for the protection of the same. The extra hours burned in the month of March were severely felt in the month of June, as it reduced the number of hours allotted to that month, and as the month was dark and stormy it caused great dissatisfaction, owing to the streets not being lighted, and as the appropriation was limited to 2,000 hours there was no remedy without creating a deficiency and violating an order of your department. A new contract was entered into with the Washington and Georgetown Gas Companies June 1, 1881, for lighting and repairing the street lamps of these cities for one year; the former at \$28 and the latter at \$30 per annum; but before the contract was signed the Committee on the District, House of Representatives, requested its suspension, when a proviso was inserted in the sundry civil appropriation bill, requiring the gas companies, on and after July 1, 1881, to light and repair the street lamps of the two cities for the sum of \$25 per lamp per annum, and giving the Commissioners the discretion of using other illuminating material in case of a refusal on the part of the companies to accept the same. The above figures will reduce the price of gas for street lamps to \$1.45 per thousand feet, while our neighboring city of Baltimore has entered into contract with the gas companies of that city for lighting their streets for three years at \$1.85 per thousand feet, showing a difference of 40 cents per thousand feet in favor of this city. The burners have been changed on the street lamps of the entire city, at the

expense of the gas company; the burner used is the Ellis adjustable. The burner was tested and adjusted by the United States inspector of gas to burn six feet of gas under a pressure of thirteen-tenths, it being the average pressure of the city.

Eighty-seven lamps have been erected during the past year in the two cities. Street lamps have been extended to keep pace with the improvements, and I can see no good reason for any further extension of lamps during the next year except a small number in the northwest section of the city, where it is improving very rapidly. Seventy-five lamps have been erected in the alleys in the different sections of this city and Georgetown from the special appropriation, approved June 4, 1880, for erecting and lighting lamps in alleys; these lamps will be a great auxiliary to the police department if proper protection can be given them, as they are entirely hid from the view of persons passing on the streets, and therefore entirely at the mercy of the inhabitants of those alleys, who are not of our best class of citizens, and love darkness rather than light; and I am sorry to report that a large number of those lamps have already been broken. I would also report that there has been a great destruction of the lamps lately erected beyond the boundary, by the boys, along Seventh-street road; also by the students of Columbia College, on Fourteenth-street road. The attention of the faculty was called to this great waste of public property, and they have promised to give them their protection in the future. An arrest was made in the month of May for the breakage of those lamps, by the police department, and when brought before the police court the law-officers of the District decided that there was no law to punish parties for destroying public property in the county, and the party was released without any punishment. I would respectfully recommend that on a repetition of the offense, the lamps be removed from the posts in the county until some law can be found to give them protection. There has also been a great destruction of glass in the lamps in the southwestern portion of the city; whole squares have been broken in one night—Fourteenth street from B to B, and Maryland avenue from Twelfth to the long bridge, have been the principal points broken. The police department have given me all the aid in their power, but with their limited force it is impossible to keep their men at one point any great length of time. A large number of glass street-signs have been broken during the past year, principally by the lamp-lighters; and on my recommendation, in my last report, that the gas companies be held responsible, which met your approval, will have a beneficial effect. The signs broken have been put in complete order, and covered in the contracts made with the two gas companies for the repairs of those signs in the future. One hundred new street designations have been placed on corner lamps which have been erected since the streets were first marked, and which will be a great convenience to strangers visiting our city.

On the 27th of June a great storm passed over the heart of the city, causing great damage to the street lamps, which accounts for the large number of new lamps used, as some eighty were entirely destroyed, and two hundred more or less injured. In Georgetown the approaches to Oak Hill Cemetery have been lighted, as well as a portion of the alleys. No erection of new lamps will be required in this city during the present year.

Respectfully submitted.

W. H. BAILEY,
Superintendent

Maj. W. J. TWINING,
Corps of Engineers, U. S. A., Engineer Commissioner D. C.

240 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Tabular statement of expenditures for lamps and gas from June 30, 1880, to June 30, 1881.

WASHINGTON.	
Gas for street lamps	\$104,982 03
Gas for alley lamps	399 00
Gas for district offices	660 60
Gas for market-houses	865 50
73 lamp-posts purchased for streets	483 26
74 lamp-posts purchased for alleys	489 88
123 lamps purchased for streets	307 50
122 lamps purchased for alleys	305 00
Erecting street lamps	422 84
Erecting alley lamps	689 91
10 lamp-posts purchased for repairs	66 20
133 lamps purchased for repairs	332 50
393 street-sign glass	159 20
101 frames and signs	176 75
Repairs incidental to improvements	182 85
12 flanges	9 00
12 arms	6 00
Redrilling old arms	2 00
12 bolts	6 00
<hr/>	
110,546 02	
<hr/>	
Number of lamps in Washington June 30, 1880	3,660
Number of lamps erected in Washington since June 30, 1880	147
Relighted old lamps	5
Discontinued	12
GEORGETOWN.	
Gas for street lamps	\$12,249 33
Gas for alley lamps	3 75
Gas for market house	200 38
14 lamp-posts purchased for streets	92 65
1 lamp-post purchased for alley	6 62
14 lamps purchased for streets	35 00
1 lamp purchased for alley	2 50
Erecting street lamps	123 75
Erecting alley lamps	8 25
24 lamps purchased for repairs	60 00
Repairs incidental to improvements	8 96
<hr/>	
12,791 19	
<hr/>	
Total	123,33 7
Number of lamps in Washington June 30, 1881	3,800
Number of lamps in Georgetown June 30, 1881	402
<hr/>	
Total	4,202

APPENDIX X 6.

REPORT OF THE CHIEF OF SPECIAL ASSESSMENT DIVISION.

OFFICE OF THE COMMISSIONERS, DISTRICT OF COLUMBIA,
SPECIAL ASSESSMENT DIVISION,
Washington, October 10, 1881.

GENTLEMEN: I have the honor to submit the following report of work done by this division since my statements dated October 17, 1879, incorporated in the report for that year of Lieut. R. L. Hoxie, Corps of Engineers, U. S. A.

The pressure of work to complete the revision of the special assessments

prior to the session of Congress in December last prevented the preparation of any statements for use in the annual report for 1880.

STREETS, AVENUES, AND ROADS.

The revision of the assessments upon all the streets, avenues, and roads has been completed, the result, as affecting each lot and subdivision, has been entered upon the records, and the drawback certificate, if any due, has either been issued or awaits the claim of owner. Appendix 1 is a statement in continuation of the tables in the annual report of 1879, and gives the revisions completed since that date of assessments upon streets, avenues, and roads.

UNITED STATES.

In the annual report for 1879 is a statement of the charges against the United States in assessments not at that time revised. Appendix 2 is a statement of the corrected amounts charged to the United States in the revision of said assessments, amounting to \$821,265.64 instead of \$1,085,226.10 as originally charged.

ALLEYS.

The alley assessments were suspended by a verbal order of the former Board of Commissioners of the District of Columbia. The present board, by their order, dated February 6, 1880, revoked the order of suspension and directed the revision of these assessments. I have completed the examination of these, and the work of correcting the frontages to be assessed under the order of August 27, 1878, ascertaining the partial and total exemptions under the existing regulations and the several acts of Congress, the calculation of the drawbacks to which the individual lots may be entitled either by a credit upon unpaid assessment or by certificate, and the entering upon the records the net result, is being pushed with all the rapidity that my extremely-reduced force will allow. Appendix 3 is a statement of the alley assessments, showing the amount of the original assessment and the amount of the revised assessment. The latter amount is subject to reduction by the drawbacks that may be found due to the individual lots as the work of completing these revisions progresses, as well as cases in which the charge against property assessed is virtually canceled by reason of the omission of such charge in certificates issued by the collector of taxes during the period of the suspension of these assessments.

LIEN CERTIFICATES NOT HELD BY THE COMMISSIONER OF THE SINKING FUND.

The amount of uncollected special assessments, as revised, applicable to the payment of lien certificates issued by the late board of public works, and not held by the commissioner of the sinking fund, exclusive of interest, deducting reductions of said assessments by additional credits allowed by order of the Commissioners of the District of Columbia, and payments into court by owners of lots, is \$154,536.68. The holders of these certificates had a lien upon the property assessed for the amount of the certificates. Many of these were paid before the revision of the assessments, and in such cases the holders of the certificates sustain no loss; in other cases, the revision having reduced

the amount owing by the property-owner, the latter has the right to pay the lesser sum. The amount of these lien certificates so affected by revision is \$279,009.77. The assessments upon which these were based have been by revision reduced to \$173,489.18. Amount of reduction, \$105,520.59. These lien certificates bear interest upon their face at 10 per centum per annum from the date of issue, an average of over eight years. The act of Congress approved June 19, 1878, provided for the issue of a drawback certificate for the amount of the erroneous or excessive charge, but as the Commissioners of the District of Columbia, by their decision dated September 10, 1880, declined to entertain the question of accrued interest upon the amount of such reduction the holders of the lien certificates have refused to accept. Appendix 4 is a detailed statement of such lien certificates as affected by the revision of the assessments upon which they were based.

DRAWBACK CERTIFICATES.

The amount of drawback certificates issued to date is.....	\$684,203 96
Amount redeemed in payment of special assessments:	
Transmitted to commissioner of sinking fund \$164,325 09	
Held for account of sinking fund.....	244,732 41
	<hr/> 409,057 50
Amount redeemed in payment of general taxes reported by collector	250,222 17
	<hr/> 659,279 67
Outstanding	\$24,924 29
Adjusted and ready for issue, awaiting demand of owners.....	\$39,914 07

EIGHT PER CENT. CERTIFICATES.

The amount of eight per cent. certificates outstanding January 1, 1881, as per report of the commissioner of the sinking fund of that date, was.	\$594,750 00
Plus accrued interest (estimated).....	220 000 00
	<hr/>
Total at that date.....	\$814,750 00
From January 1, 1881, to date, the records of this office show that there has been redeemed by receipt in payment of special assessments:	
Par value 8 per cent. bonds.....	\$73,450 00
Par value coupons.....	8,770 00
Accrued interest on bonds.....	23,912 18
Accrued interest on coupons.....	2,716 50
	<hr/> 108,848 68
	<hr/> \$705,901 32

Which amount should be increased by adding the accrued interest to date, and decreased by crediting the redemptions (if any) made by the commissioner of the sinking fund.

The amount of uncollected special assessments, as revised, pledged to the redemption of the eight per cent. certificates as appears upon the records of this division is \$684,131.55.

The above amount does not include the accrued interest at ten per centum per annum upon the lien certificates held by the commissioner of the sinking fund, nor property exempted by the acts of Congress approved June 17, 1870, and June 11, 1878, so far as such exemptions are known, nor the amounts due upon the alley assessments, which at this time cannot be accurately given for reasons heretofore stated, nor the amounts charged to the several street-railroad companies.

STREET RAILROADS.

The amount charged in the revision of the assessments for work done within two feet outside of either outer rail of the several street-railroads upon streets paved subsequent to the occupation by the company, is \$259,952.85, of which there has been paid \$15,036.12, leaving an unpaid balance of \$244,916.73.

Appendix 5 is a detailed statement of the amount charged each company and of the payments made.

PROPERTY HELD BY EDUCATIONAL, CHARITABLE, AND RELIGIOUS INSTITUTIONS.

Appendix 6 is a detailed statement of unpaid charges against such property so far as known to be so held.

CONDEMNATION OF ALLEYS.

There are of record in this division assessments for condemnation of alleys in squares 103, 158, 159, 170, 306, 364, 375, 376, 393, 417, 419, 559, 560, 579, 630, 684, 691, 693, 725, 762, 818, and 1033. Each assessment states the amount due by each lot for benefits assessed and the amount due to each lot for damages sustained. Congress, by act approved June 4, 1880, appropriated \$27,497.73 to enable the District of Columbia to make immediate settlement for land taken, without the delay incidental to the collection of the benefits assessed, and also to make payment for land taken for the gravel-pit at the head of Slash Run sewer. I have reported for payment, under said act, the amounts due to the several lots in squares 103, 159, 393, 417, 560, 579, 691, 693, 725, 818, and 1033, as well as for the gravel-pit. The reports in the remaining cases are withheld for want of satisfactory evidence that the land condemned has been taken by the District.

ORDERS.

The following orders have been received :

DECEMBER 13, 1879.

Ordered, That hereafter drawback certificates will only be issued on Monday of each week. On all other days the office of the clerk in charge of the revision of special assessments will be closed for the purpose of completing the revision.

DECEMBER 20, 1879.

Ordered, That the offices known, respectively, as "the clerk in charge of special assessments" and "the clerk in charge of revision of special assessments" are hereby consolidated, and shall hereafter be known as the special assessment division; that it shall be the duty of Mr. George W. Beall to receive all payments of special assessment bills, and keep such accounts as are incidental thereto; that Mr. William O. Roome is hereby appointed chief of the special assessment division, and as such shall assume charge of all matters and records relating to special assessments, and report directly to the Commissioners in all cases requiring the special action of the board.

DECEMBER 26, 1879.

Ordered, That in cases where work was completed prior to February 21, 1871, the law of assessment is the law of the old corporation, and the whole cost is to be assessed. Where work was completed after February 21, 1871, only one-third is to be assessed. The above decision will be observed in the H. D. Cooke assessments.

JANUARY 11, 1880.

[Memorandum order.]

To Chief of Special Assessment Division :

In issuing drawback certificates to the holders of lien certificates for so-called H. D. Cooke assessments, the drawback will be for two-thirds of the principal, and the interest on said two-thirds to date, in accordance with the terms of the lien certificate.

FEBRUARY 6, 1880.

Ordered, The chief of the special assessment division will proceed to revise the alley assessments.

The verbal order of the board suspending these assessments is hereby revoked.

FEBRUARY 26, 1880.

Ordered, That in pursuance of the resolution of the Committee for the District of Columbia of the House of Representatives, of this date, the issue of drawback certificates under provisions of the acts of Congress of June 19, 1878, and June 27, 1879, is hereby suspended, and the collector of taxes will not receive hereafter any of these certificates heretofore issued until otherwise ordered.

APRIL 1, 1880.

Ordered, That the order of February 26, 1880, suspending the issue and receipt of drawback certificates, under provisions of the acts of Congress of June 19, 1878, and June 27, 1879, is hereby revoked.

APRIL 5, 1880.

Ordered, That hereafter the cashier of the special assessment division and the collector will be required to furnish, direct to the Commissioners, a statement each day of the drawback certificates received during the day preceding, giving the number of each certificate, the amount, the lot and square upon which issued, and the name of the person to whom issued. The statements so rendered will be forwarded by the Secretary to the chief of the special assessment division, who will cause the statements to be compared by the clerks in charge of the individual ledgers, and return them, with his own signature and those of the clerks in charge of the several ledgers. As soon as practicable, similar reports will be made of drawback certificates heretofore received.

APRIL 23, 1880.

Ordered, That the chief of the special assessment division be, and he is hereby, directed to cause the funds in the custody of Mr. George W. Beall, received for condemnation of alleys, to be delivered to the treasurer of the District, who will make a special deposit of the same in the Treasury of the United States.

MAY 3, 1880.

To the Chief of the Special Assessment Division :

SIR: I am directed to notify you to discontinue the search for complaints against the so-called H. D. Cooke assessments which was instituted at the request of Hon. N. W. Aldrich, of the Committee for the District of Columbia of the House of Representatives. Also to return to the files all papers withdrawn therefrom in the prosecution of said examination, and to preserve as far as practicable, by suitable memoranda, for future reference, the results of your investigation.

Very respectfully,

WILLIAM TINDALL,
Secretary.

MAY 6, 1880.

Ordered, That hereafter no clerk discharged for cause will be allowed to practice as an attorney or agent for others in the District offices.

MAY 15, 1880.

Ordered, That when an assessment has been finally revised under acts of Congress of June 19, 1878, and June 27, 1879, and the bill settled or drawback certificates issued and accepted, as provided in said acts, no further action can be taken in such cases.

JUNE 3, 1880.

Ordered, That in case of lien certificates now being issued, the chief of the special assessment division will date the interest on the revised assessment thirty days after the date of the original assessment, in accordance with the opinion of the attorney of the District of Columbia of July 15, 1878.

JUNE 30, 1880.

Ordered, That from and after this date it shall be the duty of the collector of taxes to receive, collect, and account for all taxes assessed for special improvements; and John W. Clark, of the special assessment division is hereby transferred to the collector's office to aid him in the discharge of this additional duty.

JULY 1, 1880.

Ordered, That the drawback certificates received by the collector of taxes in payment of special assessments shall be canceled and turned over by him to the chief of the special assessment division, taking his receipt therefor.

That drawback certificates received in payment of special assessments, upon which lien certificates are held by third parties, shall be stamped, "Received in payment of special assessments upon which lien certificates are not held by the sinking fund."

That the collector of taxes will report daily to the chief of the special assessment division a detailed statement of all collections made on account of special assessments.

JULY 6, 1880.

Ordered, That in the revision of special assessments of streets, or portions thereof, where the grading or other specific work is incomplete, the charge for the work not completed shall be deducted from the assessment and charged to the general fund, to be taken up in any future assessment that may be made upon completion of the work, or held as an offset to any claims for damages that may be made on behalf of the property affected thereby. In carrying into effect this order, all grades shall be considered complete which have been brought within two feet of actual grade from street to street.

JULY 12, 1880.

Ordered, That the chief of the special assessment division is hereby authorized to receive and receipt for all books, papers, records, property, and securities belonging to that division which have heretofore been under the charge of Mr. George W. Beall.

Receipts will be given in triplicate, one copy to be deposited with the secretary to the Commissioners.

JULY 13, 1880.

Ordered, That in the revision of assessments, in cases of corner lots assessed for sewers under a corporation or other assessment not subject to revision, credit may be given on a subsequent assessment for sewers on the remaining side not to exceed seventy-five feet.

That the chief of the special assessment division shall be required to give bond in the sum of five thousand dollars.

JULY 20, 1880.

Ordered, That the collector of taxes shall transmit to the chief of the special assessment division all collections made on account of special assessments upon which lien certificates have been issued, and are not held by the sinking fund, taking his receipt therefor.

AUGUST 7, 1880.

Ordered, That the funds returned by the First National Bank of the city of New York to the Commissioners, under date of the 9th and 13th July, 1880, which funds had previously been received by George W. Beall, on tax-lien certificates numbered 1452, 3172, 227, and 24, supposed to be held by said bank, and by him transmitted to said bank, be delivered to William O. Roome, chief of special assessment division, for settlement with said Beall, and the receipt of said Roome taken therefor.

AUGUST 26, 1880.

Ordered, That the chief of the special assessment division shall transmit to the Commissioners, to be forwarded to the commissioner of the sinking fund, all certificates issued by the late board of audit which are now in his possession, received by his office in payment of special assessments pledged to the redemption of 8 per cent. certificates of indebtedness.

SEPTEMBER 4, 1880.

To the Chief of the Special Assessment Division:

SIR: You are hereby informed that drawback certificates which have or may hereafter be received in payment of special assessments upon which lien certificates are not held by the sinking fund will be stamped "Reissued, payable to the order of _____, holder of lien certificate," and signed by the chief of the special assessment division. Certificates so stamped and indorsed are receivable as provided for by the act of June 27, 1879.

Very respectfully,

W. TINDALL,
Secretary.

SEPTEMBER 8, 1880.

Ordered, That drawback certificates which may hereafter be received on account of lien certificates not held by the sinking fund will be stamped "Received for holder of lien certificates not held by the sinking fund."

When such drawback certificates are surrendered to the holder of the lien certificate for which they were received, they will be stamped "Delivered. Payable to the order of _____, holder of lien certificate," and indorsed by the chief of the special assessment division. Certificates so stamped and indorsed are receivable as provided for by the acts of June 19, 1878, and June 27, 1879.

So much of the orders of July 1, 1880, and September 4, 1880, as conflict with this order are hereby revoked.

SEPTEMBER 9, 1880.

Ordered, That the chief of the special assessment division shall have access to such records of the late board of public works and board of audit as he may require; such records not to be removed by him from the vault in which they are now deposited.

SEPTEMBER 10, 1880.

WM. O. ROOME, Esq.,

Chief of Special Assessment Division:

SIR: I am directed to notify you of the decision of the Commissioners that no change be made in the form of drawbacks under act of 19th June, 1878, which must be issued as heretofore for amount of reduction by revision, without interest.

Very respectfully,

WILLIAM TINDALL,
Secretary.

OCTOBER 30, 1880.

Ordered, That all collections made on account of assessments for condemnations of alleys shall be delivered to the treasurer and assessor of the District of Columbia, who will make special deposits of the same in the Treasury of the United States, as in the cases heretofore specially ordered.

NOVEMBER 20, 1880.

Ordered, That in the revision of the assessments for surface work, where the total expenditure was less than five hundred dollars, the chief of the special assessment division is authorized to charge such expenditure to the "general fund."

JANUARY 3, 1881.

Ordered, In cases where tender was made of amounts due upon special assessments and refused before the issue of lien certificates, all interest shall be remitted, and certificates subsequently issued will be recalled or reduced to the amount of the net assessment. If the lien certificate was issued previously, then interest will be charged to date of tender (attorney's opinion, 51,952 C. O.).

MARCH 8, 1881.

Ordered, The office of the chief of special assessment division will hereafter be closed to the public at 2 o'clock p. m., daily.

MARCH 8, 1881.

Ordered, as follows:

1st. That the chief of the special assessment division be directed to proceed at once to prepare for issue tax-lien certificates on all lots the assessments of which have been revised and which remain unpaid.

2d. That all drawback certificates now in custody of the chief of the special assessment division and held for account of the sinking fund be transferred to the custody of the auditor and comptroller; and that all drawback certificates hereafter received by him for account of said fund shall, after proper examination and verification, be also transferred to the auditor and comptroller.

APRIL 19, 1881.

Ordered, That hereafter all plats of subdivisions must have the official approval of the Commissioners before being recorded by the surveyor of the District of Columbia.

APRIL 20, 1881.

Ordered, That the order of the 19th instant is hereby amended by adding, that no new subdivision of property already subdivided will be admitted to record until all taxes due thereon shall have been paid.

MAY 14, 1881.

Ordered, That John A. Sloan, of the treasurer and assessor's office, be detailed as an expert to take charge of and thoroughly examine, under the direction of the chief of

special assessment division, the books and accounts of George W. Beall, late clerk in charge of special assessments, and to report thereon to the Commissioners as soon as possible; and Goff A. Hall is hereby appointed to discharge, *pro tempore*, the duties of said Sloan in the treasurer and assessor's office. This order to take effect on the 16th May, 1881.

MAY 17, 1881.

Ordered, That so much of the order of July 1, 1880, as required the transmittal of drawback certificates to the special assessment division is hereby revoked, and the certificates received by the collector of taxes from and after the 30th ultimo will be sent by that officer direct to the auditor and comptroller, District of Columbia.

MAY 26, 1881.

Ordered, That in cases where property has been sold for non-payment of any special assessment, the chief of the special assessment division is authorized and directed to enter upon the records of his office upon such account, "Satisfied by sale."

JUNE 13, 1881.

Ordered, The order of May 17, 1881, made for the temporary relief of the special assessment division, being no longer needed, is hereby revoked, and the collector of taxes is directed to transmit, as formerly, all drawback certificates received by him in payment of special assessments to the chief of the special assessment division, taking his receipt therefor.

In compliance with the order of the Commissioners of the District of Columbia dated July 12, 1880, I received from Mr. George W. Beall the following securities and cash:

Drawback transfers, old issue.....	\$45,627 82
Drawback certificates for account of sinking fund	95,015 83
Auditor's improvement certificates of board of public works.....	61,300 00
Auditor's certificates of board of public works	36,427 01
Board of audit certificates	14,677 49
Auditor's sewer certificates of board of public works.....	30,510 34
Drawback transfers	1,897 54
Board of public works' letters granting allowances	745 40
On account of lien certificates held by third parties in drawbacks.....	48,670 05
On account of lien certificates held by third parties in 8 per cents	6,750 00
On account of lien certificates held by third parties in coupons.....	416 00
On account of lien certificates held by third parties in cash.....	47 32
W. S. Moore, treasurer, certified check held as collateral.....	1,629 41
	<hr/>
	\$343,714 21

On August 27, 1880, I forwarded to the Commissioners of the District of Columbia, for transmittal to the commissioner of the sinking fund, in accordance with order dated August 26, 1880, certificates of the late board of audit, amounting to \$14,677.49.

Drawback certificates have been received for account of the sinking fund, by this division, in accordance with orders of the Commissioners of the District of Columbia, dated April 17, 1880, July 1, 1880, and July 12, 1880, as per Appendix 7, amounting to \$244,732.41. These certificates after examination are recorded and transmitted to the auditor and comptroller of the District of Columbia, under order dated March 8, 1881.

There has been received for account of lien certificates not held by the commissioner of the sinking fund, and now on hand awaiting the demand of the owners, in cash, 8 per cent. bonds, coupons, accrued interest, and drawback certificates (for detailed statement of which see Appendix 8), the sum of \$3,471.58.

Payments have been made by this division on account of lien certificates issued by the board of public works, and not held by the commissioner of the sinking fund, as per Appendix 9, amounting to \$100,146.52.

The preparation of lien certificates was suspended by direction of the

Commissioners of the District of Columbia until March 8, 1881, when the work was ordered to proceed. These have now been issued upon all streets, avenues, and roads, except in cases awaiting the decision of the Commissioners of the District of Columbia, upon some question affecting the assessment.

Of the claims for revision and complaints filed in 1878 and 1879, 12,637 separate communications have been briefed, numbered, entered of record, investigated, and reported upon. Many of these communications refer to more than one piece of property; one paper mentions 753 distinct lots. In addition to these, 4,759 written reports have been made upon other papers referred to this office for investigation. Powers of attorney have been filed to the number of 6,904.

The current work of this office is by no means inconsiderable, and embraces much that does not appear in a report of this nature.

I cannot in justice to my clerks close this report without bearing testimony to their faithful conduct. They have worked without regard to office hours, and without the hope of fee or reward, actuated solely by their zeal for the public service.

I am, gentlemen, very respectfully, your obedient servant,

WM. OSCAR ROOME,

Chief of Special Assessment Division.

Hon. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

APPENDIX X 7.

REPORT OF THE CHEMIST AND GENERAL INSPECTOR OF ASPHALT PAVEMENTS.

WASHINGTON, D. C., *November 26, 1881.*

MAJOR: I have the honor herewith to transmit to you a digest of the many analyses I have made during the past fiscal year for the engineer department, health department, metropolitan police, &c.

For the health department I have thus far made 204 analyses, viz, 176 of various kinds of water and 34 others of different nature, such as of milk, butter, vinegar, sugar, candies, ice-cream, bread, &c. The report in each particular case was at the proper time submitted to Dr. Smith Townshend, the health officer.

I do not regard it necessary here to repeat the processes followed by me in the analysis of the pump and other waters and the results obtained therefrom, as my report covering that subject has already been published in the last annual report of the health department.

For the metropolitan police, and for Dr. D. C. Patterson, the coroner of the District, I have made two toxicological analyses in cases of suicide. In both cases I found arsenic.

For the engineer department a daily analysis is made in my laboratory, as the work is proceeded with, of the mixture of all the asphalt pavements laid in the District. One hundred and twelve analyses on that subject were made during the year. The average quantity found of asphalt cement is—

	Per cent.
Chemically pure, 9.60 per cent. = commercial.....	14.40
Carbonate of lime.....	16.00
Fine sand.....	79.60
	<hr/> 190.00

This composition makes a tough and still hard asphalt pavement.

The results of these analyses have been weekly submitted to Lieutenant Greene.

All the hydraulic cements used on the public work of the District are daily tested by me as to their tensile strength, and the results obtained are weekly reported to Lieutenants Hoxie and Green with an annotation of the points where the cements have been used.

Hydraulic cement, being one of the most important materials employed in the public work now in progress in this District, I have devoted to it a great deal of time, both in accordance with your orders and wishes and for the purpose of advancing the manufacture in this neighborhood of a hydraulic cement of the first class, equal at least in quality with the best Rosendale cement; and I am now fully confident that through my analyses and the advice that, accordingly, I have given to our neighboring hydraulic cement manufacturers, namely, of Shepherdstown, Round Top, and Cumberland cements, these manufacturers are now making and furnishing the market of the District of Columbia with hydraulic cement fully equal to the well-known Rosendale hydraulic cement. The District has not only derived therefrom the advantage of a better quality of hydraulic cement, but through our labors a competition in this important article has been created, reducing the market price 20 per cent. at least.

It is a well-known fact that, with the knowledge of the chemical composition of a limestone, the nature of the lime produced therefrom after calcination can be easily adjudged. The analysis of limestone thus presents to the engineer department a high interest. Therefore, I now give you the results of my analyses and a succinct idea of the manner in which I have proceeded in these analyses.

In the analysis of limestone, it is of the greatest importance to determine the quantities of moisture, carbonate of lime, magnesia, alumina, and silica.

PROCESS OF ANALYSIS.

Ten grams of the limestone in small fragments are calcined in a platinum crucible at white heat; the loss p represents carbonic acid and moisture.

After this ten other grams of the pulverized stone are dissolved in dilute chlorhydric acid; carbonate of lime and of magnesia and the metallic oxides are dissolved; the silicate of alumina and silica remain untouched; the precipitate is received on a filter, washed with hot pure water, calcined, and weighed. The weight p' represents anhydrous silicate of alumina and the silica. The filtrate and washes after being mixed are evaporated at a low heat, in order to eliminate the excess of hydrochloric acid. This is redissolved in pure water, and is put in a glass-stopped bottle of a capacity of 2,000 grams. This is filled with pure saturated lime-water. After having been well shaken it is left standing, the oxides of iron, manganese, and magnesia are precipitated; the liquid is decanted by means of a syphon after the alkali reaction has been ascertained; the precipitate is received on a filter, washed, calcined, and weighed.

It is apparent that, if the weight p' is subtracted from the weight $(10-p)$ the difference $(10-p-p')$ represents the weight of the lime CaO : we find now, by calculation: 1st, the weight of q of carbonic acid which formed carbonate of lime with the quantity of lime found; and, 2d, the weight of the same acid which formed carbonate of magnesia with the precipitate p'' , given by the lime-water. The precipitate as magnesia counted $(q+q')$ represents thus the weight of the carbonic acid contained

in the limestone. Thus we have: $p-(q+q')$, representing H. O.; water combined with the hydrosilicate of alumina.

In order to ascertain the exact composition of the precipitate, it is necessary to analyze the precipitate produced by the lime-water, which is done in the following manner:

The precipitate is dissolved in diluted chlorhydric acid, and an excess of ammonia is added; alumina and the oxide of iron alone are precipitated. This is received on a filter; it is redissolved in dilute chlorhydric acid. To this solution is added caustic potash, which precipitates the oxide of iron, and alumina remains dissolved; the oxide of iron is well washed with hot water, calcined and weighed.

The alkaline containing the alumina is sursaturated with chlorhydric acid, and the alumina is precipitated, the solution being heated by carbonate of ammonia to separate the magnesia from the oxide of manganese; this is done by adding sulphhydrate of ammonia which precipitates the manganese as sulphide; then, after the separation of this sulphide, magnesia is precipitated by phosphate of ammonia as phosphas magnesiæ ammoniacale. This precipitate is received on a filter, washed and calcined, and from the hydrophosphate of magnesia obtained and weighed. We now calculate the quantity of magnesia, and, therefrom, the quantity of carbonate of magnesia contained in the limestone.

SYMBOLS AND COMPOSITION FROM WHICH TO CALCULATE.

Moisture, HO.

Silica, Si; O₂.

Sesquioxide of iron, Fe₂O₃.

Alumina, Al₂O₃.

Carbonate of lime, CaO.CO₂.

Carbonate of magnesia, MgO.CO₂.

Residue and loss.

Organic matter and other salts.

Carbonate of lime contains {	CaO	56.00
	C.O ₂	44.00
		<hr/> 100.00
Carbonate of magnesia contains {	MgO	45.45
	C.O ₂	54.55
		<hr/> 100.00
Pyrophosphate of magnesia contains {	MGO	36.04
	Po ₂	63.96
		<hr/> 100.00

The following exhibits represent the analysis of the limestone in the different quarries from which the Shepherdstown, Round Top, and Cumberland cements, respectively, are manufactured:

HYDRAULIC CEMENT. QUARRY No. 1.

[Result of analysis of limestone from the Shepherdstown "twelve strata."]

Number of stratum.	Moisture.	Silica and silicate of ammonia.	Sesquioxide of iron and alumina.	Carbonate of lime.	Carbonate of magnesia.	Loss, organic and other salts.	Remarks and thickness of strata.
No. 1.....	0.20	31.30	14.50	53.45	Traces.	0.55	4.00×31.30=125.20 silica and silicate.
No. 2 A.....	0.25	22.99	14.90	60.29	0.75	0.82	2.00×22.99= 45.98 silica and silicate.
No. 2 B.....	1.20	18.70	16.60	63.40	Traces.	0.10	0.6"×18.70= 9.35 silica and silicate.
No. 2 C.....	1.20	15.70	17.40	65.00	do	0.70	1'×15.70= 15.70 silica and silicate.
No. 3.....	1.25	23.64	15.34	59.67	do	0.10	2'×23.64= 47.28 silica and silicate.
No. 4.....	1.20	65.50	5.98	27.00	do	0.32	Discarded.
No. 5.....	0.60	51.60	11.07	38.13	do	0.60	1'×51.60= 51.60 silica and silicate.
No. 6 A.....	0.50	32.60	10.87	40.86	14.67	0.50	2'×32.60= 65.20 silica and silicate.
No. 6 B.....	0.25	43.70	5.05	26.60	23.30	1.10	2'×43.70= 87.40 silica and silicate.
No. 7.....	0.60	11.60	4.03	46.28	37.00	0.49	1.90'×11.60= 20.30 silica and silicate.
No. 8 A.....	0.30	41.15	5.65	31.45	20.89	0.56	0.8"×41.50= 27.42 silica and silicate.
No. 8 B.....	0.40	29.67	11.90	38.95	19.00	0.08	14.0'×29.67=118.68 silica and silicate.
							20.25 feet. 614.11 silica and silicate of alumina.

614.11÷20.25=30.37 average percentage of silicate of alumina and silica contained in the eleven strata of this stone.

ROUND TOP HYDRAULIC CEMENT QUARRY.

[Result of analysis of eleven strata composing the quarry.]

Number of stratum.	Moisture.	Silicate of alumina and silica.	Sesquioxide of iron and alumina.	Carbonate of lime.	Carbonate of magnesia.	Loss.	Thickness of stratum.	Remarks.
No. 1.....	0.10	21.68	3.05	74.00	Traces..	1.22	7	Discarded.
No. 2.....	0.25	34.00	10.57	54.00	do	1.18	7	9×34 = 306
No. 3.....	0.51	52.00	18.60	28.00	do	0.88	1	1×52 = 52
No. 4.....	0.08	26.10	4.00	67.95	do	1.92	7	7×26 = 182
No. 5.....	0.10	31.37	5.80	62.20	do	0.52	1	1×31.37= 31.37
No. 6.....	0.60	79.30	6.83	13.00	do	0.27	2 6	Discarded.
No. 7.....	0.17	20.67	6.65	72.50	do	0.01	4	Do.
No. 8.....	0.23	60.78	8.53	29.00	do	1.46	1	1×60.78= 60.78
								19 feet. 632.15 silicate of alumina and silica.
No. 9.....	0.45	83.18	11.50	3.00	do	1.87	4	Discarded.
No. 10.....	0.05	5.00	4.70	90.00	do	0.25	1	Do.
No. 11.....	0.06	12.17	4.00	75.00	8.50	0.27	6	Do.

Six strata are discarded, and five are employed in the manufacture of this cement. The five strata represent 19 feet and 632.15 silicate of alumina and silica=33.27 average per cent. of silicate of alumina and silicate.

CUMBERLAND HYDRAULIC CEMENT QUARRY.

[Result of analysis of twelve strata composing the quarry.]

Number of strata.	Silica and silicate of alumina.	Carbonate of magnesia.	Carbonate of lime.	Sequoioxide of iron.	Moisture.	Loss.
Mixture of eleven strata.....	20.00	2.20	77.00	0.40	0.20	0.20
Twelfth upper stratum.....	45.00	2.00	52.25	0.60	0.10	0.05

32.50 average percentage of silica and silicate of alumina.

It has thus been shown that the Shepherdstown cement requires less silica and silicate of alumina for the manufacture of a strong, slow setting hydraulic cement than for the Cumberland and Round Top cement. This must be attributed to the different percentages of magnesia contained in the different stones.

Shepherdstown cement contains 5.74 per cent. of carbonate of magnesia.

Cumberland cement contains 2 per cent. of carbonate of magnesia.

Round Top cement contains traces only of carbonate of magnesia.

Shepherdstown cement requires 30.37 per cent. of silica and silicate of alumina.

Cumberland cement requires 32.50 per cent. of silica and silicate of alumina.

Round Top cement requires 33.27 per cent. of silica and silicate of alumina.

SHEPHERDSTOWN HYDRAULIC CEMENT.

Upon investigation and analysis of the strata from which this cement is made, I recommended the rejection of stratum No. 4, 5 feet thick. The cement manufactured from the other named strata will not set before 25 minutes in a temperature of from 70° to 80° Fahr.; and it may be classified among the "cold setting" cements. It generally gives good satisfaction; the average breakage 1"×1" at five days is 55 pounds; at thirty days, 250 pounds; and it breaks as high even as 350 pounds.

ROUND TOP HYDRAULIC CEMENT.

The quarry worked by the Round Top Hydraulic Cement Company is composed of eleven strata, which I analyzed and now report the result thereof.

In the manufacture of their hydraulic cement they, heretofore, used one stratum only, No. 4, 7 feet thick, and containing 26.10 per cent. of silica and silicate of alumina; while they rejected, as unfit for use, all the other ten strata. The cement thus prepared sets hard in two minutes, and was not, therefore, suitable for use in any of the public works. According to the results of my investigation, and having finished the analysis of their quarry, I advised the Round Top Hydraulic Cement Company to use in the manufacture of their cement the following strata, according to this formula, viz:

No. 2, 9 feet; No. 3, 1 foot; No. 4, 7 feet; No. 5, 1 foot; and No. 8, 1

foot; in all 5 strata, representing 19 feet in thickness, and containing an average percentage of 33.27 of silica and silicate of alumina.

The cement manufactured from the above-named five strata gives excellent results. It sets slow and cold in about twenty minutes, and gives a tensile strength which compares favorably with those of the Shepherdstown and Cumberland companies.

CUMBERLAND HYDRAULIC CEMENT.

The quarry of the Cumberland Hydraulic Cement Company is composed of twelve strata, of which eleven strata were heretofore used in the manufacture of their hydraulic cement, while the twelfth or upper stratum had been rejected as unfit for use.

The cement thus obtained sets hard in five minutes, and after being made into mortar mixed with sand it sets before the mason can put it into place; at the second setting it loses part of its hydraulic properties. For that reason the use of this class of cement was prohibited in the public works of the District of Columbia.

In compliance with your desire and orders I investigated the manufacture of the Cumberland hydraulic cement; and I learned the above facts through written communications and verbal explanations made by the owners and the superintendent of the quarry.

The analysis of the cement made from the eleventh strata and the analysis of the upper stratum calcined show evidences that these gentlemen had for years rejected a stone, the twelfth or upper stratum necessary to make a slow setting cement.

This rejected stone having been properly calcined, pulverized, and screened, was mixed in different proportions with the original Cumberland cement made from the eleventh strata, when I discovered that equal parts of the rejected stone mixed with equal parts of the eleven strata of cement produce a good slow setting hydraulic cement, giving about equal results in tensile strength with the Shepherdstown cement, with the difference that it sets somewhat quicker; yet it is slow enough to be used in all public works, provided the above formula is strictly adhered to.

In conclusion I desire, with many obligations, to acknowledge the assistance received from you, greatly facilitating my operations, and to remain,

Very respectfully, your obedient servant,

E. J. DE SMEDT,

Chemist, General Inspector of Asphalt Pavements.

Maj. WILLIAM J. TWINING, *United States Engineers,*
Engineer Commissioner, District of Columbia.

APPENDIX X 8.

TABLE A.—Sewer and miscellaneous contracts from July 1, 1890, to June 30, 1891.

Number of contract.	Date of contract.	Name of contractor.	Locality.			Description of work.	Cost.	Remarks.
			Street.	From—	To—			
177	1879. Apr. 7	B. J. Coyle, W. J. Whitthorne, D. B. Cooper.	.....	.....	.....	Construct an outlet at or near Seventeenth and E streets northwest, consisting of an arch of 24 feet span, supported by side walls upon pile foundations. Construct through the White Lot, from B street to Fifteenth and E streets northwest, a 2-ring brick sewer, 8 feet internal diameter, upon a hydraulic cement concrete foundation, with 5 manholes complete. Construct on Fifteenth street, from E street to New York street, and on New York avenue from Fifteenth to Thirteenth street, a 2-ring brick sewer, 6 feet internal diameter, upon a hydraulic cement concrete foundation, with 11 manholes complete. Construct on New York avenue, from Thirteenth to Eleventh street, northwest, a 2-ring brick sewer, 5 feet internal diameter, with 4 manholes complete. Construct on New York avenue, from Eleventh to Ninth streets northwest, a 2-ring brick sewer, 4 feet internal diameter, with 5 manholes complete. Construct on the south side of Mount Vernon Place, from Ninth to Seventh streets northwest, a 2-ring brick sewer, 3 feet internal diameter, with 3 manholes complete. Construct the outlet section of Bounded street (intercepting) auxiliary sewer, and so much of the 20-foot sewer as may be required for the period of five years from November 1, 1890.	\$30, 659 97	Incomplete.
188 Ex. of 189	June 10 Nov. 8	J. G. Leane..... D. B. Cooper.....	Boundary.....	Fourteenth street east.	Eastern branch {		49, 751 71	Incomplete.
229	Oct. 31	F. M. Draney.....	.....	.....	.....	Removing and transporting night-soil for the period of five years from November 1, 1890.	.....	Do.

245	Oct. 30	D. B. Cooper	Boundary	Fourteenth street Eighth street east	Construct the second section Boundary between the sewer, 20 feet interior diameter, between Fourteenth and Eighth streets. Furnish and deliver for year ending June 30, 1881.	18, 305 84	Do.
257	June 24, 1880	William Ballantyne and R. C. Ballantyne.	Stationery		Complete.		Complete.
258	June 26	H. I. Gregory	Stores, &c		Do.		Do.
259	June 29	W. B. Williams	Furniture		Do.		Do.
260	June 30	G. A. Whitaker	School books		Do.		Do.
261	June 30	C. Becker	Saddlery		Do.		Do.
262	June 30	W. B. Moses	Furniture		Do.		Do.
263	June 30	J. L. Savage	Hardware		Do.		Do.
264	July 1	F. Riva	Blank forms and printing		Do.		Do.
265	July 2	Thomas K. Scheller and Ed. Stevens.	Drugs and chemicals		Do.		Do.
266	July 6	Gustav & James Lausburgh.	Dry goods, &c		Do.		Do.
267	July 6	Luther Martin and W. H. Butler.	Glass, paints, and various.		Do.		Do.
268	July 6	F. Pratt	Boots and shoes.		Do.		Do.
269	July 7	Eureka Fire Hose Company.	Hose.		Do.		Do.
270	July 7	H. W. Hall.	Groceries		Do.		Do.
271	July 8	John McClelland	Plumbers' supplies, &c.		Do.		Do.
272	July 8	Thomas Somerville	Plumbers' supplies, &c.		Do.		Do.
273	July 8	R. C. Howitt	Forage		Do.		Do.
274	July 9	B. D. Carpenter	County		Do.		Do.
275	July 9	Washington Brick Machine Company.	Bricks		Complete.		Complete.
276	July 10	H. W. Blunt.	Hydraulic cement		Do.		Do.
277	July 13	George White and Chas. White, Jr.	Lamp posts and miscellaneous castings.		Do.		Do.
278	July 13	Samuel Emery	Construction material (curb, flag and traps).		Do.		Do.
279	July 14	J. T. Varnell.	Fresh and salt meats.		Do.		Do.
280	July 15	Z. Downing	Lumber and building material.		Complete.		Complete.
281	July 17	G. A. Sheehan			Do.		Do.
282	Aug. 10	John H. Howlett			Do.		Do.
283	Aug. 11	John G. Bright and R. T. Humphrey.			Do.		Do.
284	Aug. 12	Robert Downing			Complete.		Complete.

TABLE A.—Sewer and miscellaneous contracts from July 1, 1880, to June 30, 1881—Continued.

Number of contract.	Date of contract.	Name of contractor.	Locality.		Description of work.	Cost.	Remarks.
			Street.	From— To—			
296	1880. Aug. 12	W. H. Mohler and Jas. Reynolds.	Boundary street.....	Eighth street w. Ninth street w.	Construct an egg-shaped sewer, 3.5 by 5.25 feet inside measurement, including manholes and all appurtenances, complete. Construct an egg-shaped sewer 3.25 by 4.875 feet, inside measurement, including manholes and all appurtenances, complete.	\$6,714 83	
			U street	Ninth street w. Tenth street w.	Construct an egg-shaped sewer, 2.5 by 3.75 feet, inside measurement, including manholes and all appurtenances, complete.	.....
			10th street.	U street north. V street north.	Construct an egg-shaped sewer, 2.5 by 3.75 feet, inside measurement, including manholes and all appurtenances, complete.	.....
			V street.....	Tenth street w. Thirteenth street west.	Construct an egg-shaped sewer, 2 by 3 feet, inside measurement, including manholes and all appurtenances, complete. Lay an 18-inch pipe overflow. Lay a 12-inch pipe overflow. Take up 18-inch sewer pipe and haul same to property yard.	.....
297	Aug. 19	R. C. King			Construct a brick school-house upon a lot upon Bladensburg road in the county of Washington, D. C.	.....
298	July 23	E. K. Johnson and A. L. Johnson.	Fuel		Furnish and deliver for year ending June 30, 1881.	.....	Complete.
299	Aug. 23	E. N. Gray and Geo. E. Noyes.	Condenser and air-pump.		Construct surface condenser and air-pump, and connect the same with the high-service pumping engine in Georgetown, D. C.	2,527 48	Do.
305	Sept. 13	W. H. Mohler and Jas. Reynolds.	Virginia avenue south-west.	Tenth street w. Eleventh street west.	Construct a circular pipe sewer, 24 inches interior diameter, upon a hydraulic cement concrete foundation.	599 90	Do.
306	Aug. 24	A. B. Kellogg	Trap-rock blocks		Furnish and deliver at the 6th street wharf in Washington, D. C., 147,000 trap-rock paving blocks, more or less.	9,906 90	Do.
311	Nov. 13	Potomac Terra-Cotta Co., by J. C. McKeldin, vice-president	Construction material—sewer pipe.		Furnish and deliver for year ending June 30, 1881.	.....	Do.
312	Nov. 4	Great Falls Ice Co., by Ice			do	.....	Do.

	213	Nov. 20	Vocary of Rock Creek Church parish, by K. J. Middleton, Jr., secretary.					1,450 00	
316	1881	Mar. 11	F. Maloney and John Cuthbert.	Smithsonian grounds				1,313 17	Complete.
317		Mar. 14	W. H. Richter and Jas. Reynolds.	Square 518.				1,085 00	Do.
318		Mar. 15	A. Flynn	Squares 319 and 345				1,067 90	Do.
324		May 5	Wm. J. Acker and Geo. Netzey.	Boundary				.....	Incomplete.
325		May 23	C. Thomas					.....
326		June 4	F. M. Draney					.....	Incomplete.
								124,012 70	

Remove the bodies from Holmes Cemetery to Rock Creek Cemetery.

Construct 12-inch pipe sewer through Smithsonian grounds, cleaning out old sewer, crossing square No. 518, and laying therein 18 and 24 inch pipe sewer, and filling old sewer with earth.

Cleaning out old sewer crossing squares 319 and 345, extending from 10th street to north side of H street, n. w., and laying therein a 12-inch pipe sewer, and filling old sewer with earth, complete.

Construct the 3d section of Boundary street (intercepting) auxiliary sewer, 20 feet interior diameter, from the east side of 12th street 6. westwardly.

Construct 2-story brick cottage on grounds of Industrial Home School, Georgetown, D. C.

Remove garbage, &c., for a period of 5 years from July 1, 1881.

APPENDIX X 9.

TABLE B.—*Contracts for improvement of streets.*

A—ASPHALT.

No. of contract.	Date.	Name of contractor.	Locality.		
			Street.	From—	To—
287	July 23, 1880	John S. Baldwin	Pennsylvania ave. 10th street west.... A street north.... A street south.... 1st street, G't'n.... Gay street, G't'n....	K street north.... F street north.... 1st street east.... 2d street east.... Fayette street.... High street.....	23d street west.... G street north.... 2d street east.... 2d street east.... High street.... Washington st....
290	July 23, 1880	Cranford & Filbert..	K street north....	18th street west....	23d street west....
293	Aug. 10, 1880	John S. Baldwin	Intersection of 3d street west.	.....	D street north....
307	Sept. 20, 1880	Cranford & Filbert..	1st street east.... 10th street west.... 15th street west.... Massachusetts av.	B street north.... M street north.... K street north.... 3d street west....	C street north.... O street north.... Rhode Island ave. 7th street west....
308	Sept. 21, 1881	J. S. Baldwin	E street south.... H street south.... I street north....	4½ street west.... 4½ street west.... 17th street west....	7th street west.... 7th street west.... 18th street west....
309	Sept. 21, 1881	J. S. Baldwin	6 street west.... 12th street west.... F street north....	New York avenue N street north.... 17th street west....	Boundary street O street north.... 18th street west....
323	Apr. 14, 1881	H. L. Cranford	M street north....	6th street west....	New Jersey ave....
322	Apr. 11, 1881	J. S. Baldwin	Indiana avenue.... Louisiana avenue....	4th street west....	5th street west....
		Total .....	.....	.....	.....

B.—GRANITE.

256	June 23, 1880	W. R. Davies.....	3d street west....	Pennsylvania ave.	D street north....
275	July 13, 1880	Mohler & Reynolds..	11th street west....	F street north....	G street north....

APPENDIX X 9.

ment and repair of streets.

PAVEMENTS.

Description and character of work.	No. of square yards.	Cost per square yard.	Contract work.	Extra work.	Cost of material.	Total cost.	Remarks.
Lay asphaltum pavement 2½ inches in thickness when compressed, with hydraulic cement concrete base 6 inches deep.	1,225.32	\$1 84½	\$2,260 71	\$12 74	\$14 17	\$2,288 62	South side: \$161.16 refunded by R. R. Co.
	955.71	1 79½	1,717 89	55 65	1 34	1,774 88	
	2,787.64	1 84½	5,143 19	84 84		5,228 03	
	2,261.15	1 84½	4,171 82	80 46		4,252 28	
	5,689.29	1 84½	10,510 96	239 70	8 98	10,759 59	
	3,525.12	1 84½	6,512 66	86 69		6,599 35	
.....do.....	11,670.78	1 83	21,357 52	642 05	77 45	22,077 02	Granite block pavement on south side of street between 20th and 21st street. (See granite block table.)
.....do.....	436.23	1 79½	784 12		15 75	799 87	\$77.66 refunded by R. R. Co.
.....do.....	1,986.55	1 85	3,675 12	60 96		3,736 08	
.....do.....	3,442.86	1 85	6,369 27	149 41		6,518 68	
.....do.....	6,920.55	1 85	12,803 02	193 78		12,996 80	
.....do.....	3,910.86	1 86	7,200 84	115 28		7,316 12	South side of R. R. tracks: \$33.33 deducted for gravel; \$623.56 refunded by R. R. Co.
Grade, set curb, lay brick pavement, reduce the width of carriage way, and lay asphalt pavement.	3,804.77	1 85	8,230 68	104 39	1,337 96	9,672 43	
	3,474.11	1 85	9,033 87	184 23	909 96	10,128 06	
	2,672.28	1 85	5,595 30	*416 86	1,415 93	7,428 09	*Grading, setting curb, &c., included in this item; \$8.32 refunded by R. R. Co.
Lay asphaltum pavement 2½ inches in thickness when compressed, with hydraulic cement concrete base six (6) inches deep.	16,636.25	1 85	30,777 06	799 28	68 80	31,645 14	
	1,522.36	1 85	2,816 36	58 50	3 57	2,878 43	
	2,855.67	1 85	5,282 99	89 24		5,372 23	
.....do.....	5,021.33	1 85	11,888 84	255 14	3,525 94	15,164 92	\$13.72 deducted for deficiency in paving cement. *25.2 square yards paid for by R. R. Co.
	542.68	50.6					*339.53 square yards paid for by R. R. Co.
	*25.20						
.....do.....	3,385.45	1 85	6,399 00	49 42	440 24	6,888 66	
	*339.53						
	329.40	51.7					
.....do.....	85,420 48		162,025 62	3,674 62	7,820 04	173,520 28	

BLOCK PAVEMENTS.

Lay granite block pavement with gravel and sand foundation, and filling of heated gravel and coal-tar paving cement in the joints.	4,230.54	\$0 55	\$2,221 55	\$206 07	\$5,090 00	\$7,517 62	\$26.11 refunded by R. R. Co. Paving blocks furnished by the District. \$105.24 deducted for deficiency in paving cement.
.....do.....	1,214.22	54½	621 00	63 33	1,635 62	2,319 95	\$222.47 refunded by R. R. Co. Paving blocks furnished by the District. \$37.14 deducted for deficiency in paving cement.

TABLE B.—*Contracts for improvement*

B.—GRANITE

No. of contract.	Date.	Name of contractor.	Locality.		
			Street.	From—	To—
279	July 13, 1880	P. Maloney	B street north....	1st street west....	3d street west....
282	July 14, 1880	Steepe & Gannon	1st street east....	B street south....	C street south....
290	July 23, 1880	Cranford & Filbert ..	K et. n. (south side)	20th street west....	21st street west....
300	Aug. 25, 1880	Mohler & Reynolds..	6th street west....	F street north....	G street north....
302	Sept. 7, 1880	Thomas Joyce	7th st. west (west side).	C street north....	D street north....
			11th street west....	K street north....	O street north....
			19th street west....	Pennsylvania ave.	K street north....
			Congress street....	Bridge street....	Gay street....
303	Sept. 7, 1880	John Cudmore	C street north....	Delaware avenue.	1st street east....
304	Sept. 11, 1880	F. M. Draney	Water street	12th street west....	12½ street west....
319	Apr. 9, 1881.	Thomas Joyce	2d street west....	Pennsylvania ave.	C street north....
			3d street west....	Pennsylvania ave.	B street south....
			8th street west....	Pennsylvania ave.	E street north....
320	Apr. 9, 1881	Thomas Joyce	Indiana avenue....	3d street west....	4½ street west....
			Louisiana avenue.	4½ street west....	7th street west....

and repair of streets—Continued.

BLOCK PAVEMENTS.

Description and character of work.	No of square yards.	Cost per square yard.	Contract work.	Extra work.	Cost of material.	Total cost.	Remarks.
.....do.....	3,526.07	54	1,738 27	108 71	4,813 66	5,860 64	Paving blocks furnished by the District. \$20 deducted for deficiency in paving cement.
.....do.....	2,551.70	58	1,073 33	115 15	2,746 98	3,935 46	Paving blocks furnished by the District. \$29.60 deducted for deficiency in paving cement.
.....do.....	619.12	57	346 51	.....	766 95	1,113 45	Paving blocks furnished by the District. \$6.39 deducted for deficiency in paving cement.
.....do.....	975.18	54½	525 78	.....	1,139 63	1,665 41	Paving blocks furnished by the District. \$3.26 deducted for deficiency in paving cement.
.....do.....	506 60	49½	252 03	8 04	577 64	837 71	\$92.04 refunded by R. R. Co. Paving blocks furnished by the District.
.....do.....	4,326 06	49½	2,152 21	481 40	5,569 90	8,203 51	\$1,395.94 refunded by R. R. Co.
.....do.....	3,170.21	49½	1,577 17	494 68	4,636 69	6,708 54	Paving blocks furnished by the District.
.....do.....	1,742.38	49½	866 83	303 34	2,391 69	3,561 86	Paving blocks furnished by the District.
.....do.....	2,060.54	49½	1,001 87	95 83	2,649 11	3,746 81	Paving blocks furnished by the District.
Lay granite (2d class) block pavement with gravel and sand foundation, with filling of gravel.	3,110.38	27	839 77	309 27	3,676 65	4,825 69	Do.
Lay granite block pavement with gravel and sand foundation, and filling of heated gravel and coal-tar paving-cement in the joints.	3,963.27	46	1,698 90	162 14	5,275 66	7,136 70	Do.
	5,940.79	46	2,732 76	201 92	8,072 88	11,007 56	Do.
	3,652.52	46	1,665 99	106 84	5,141 85	6,914 68	Paving blocks furnished by the District. \$11.17 deducted for deficiency in paving cement.
Grade, set out curb, &c., and lay granite block pavement	*303.24 8,940.23	47	8,288 16	4,731 98	20,128 79	33,148 95	Paving blocks furnished by the District. *303.24 square yards paid by R. R. Co. \$711.67 deducted for sodding and paving cement not furnished. †Grading, setting curb, &c., included in this item; of this amount \$4,602.96 is chargeable to appropriation for 1882.
	50,853.05	.....	27,602 15	7,388 70	73,513 70	108,504 55	

TABLE B.—*Contracts for improvement*

C.—COMPRESSED ASPHALT

No. of contract.	Date.	Name of contractor.	Location.		
			Street.	From—	To—
326	May 24, 1881	John Cudmore	H street north	Connecticut ave ..	Vermont avenue..

D.—OPENING AND

301	Sept. 3, 1880	Steep & Gannon	U street north.....	14th street west...	16th street west...
321	Apr. 11, 1881	W. H. Mohler	5th street easti....	Stanton Place.....	K street north
333	June 16, 1881	J. Reynold	18th street north...	Boundary	S street north
	July 8, 1880	M. Shea	18th street west...	R street north.....	S street north
	June 22, 1881	M. Burke	New York avenue	1st street east.....	North Capitol st..

RECAPIT

A.—Asphalt pavement
B.—Granite block pavement
C.—Asphalt block pavement
D.—Opening and grading streets
Total
Cost of inspection on above
Total

and repair of streets—Continued.

BLOCK PAVEMENT.

Description and character of work.	No. of square yards.	Cost per square yard.	Contract work.	Extra work.	Cost of material.	Total cost.	Remarks.
Lay compressed asphalt block pavement.	2,572.02	\$1.76	\$5,634.06	\$328.79	\$1,698.18	\$7,661.03	
	*316.91						*316.91 square yards paid for by R. R. Co.
	2,888.93						

GRADING STREETS.

Grade, set curb, lay cobble-stone gutters, and brick pavement.	.....	.....	\$1,759.40	\$40.89	\$1,844.95	\$3,645.24	
Grade and gravel.....	.....	.....	4,176.00	37.44	.....	4,213.88	
Grade.....	.....	.....	999.99	.....	.....	999.99	
Grade.....	10,350	\$0.10	1,035.00	.....	.....	1,035.00	Order of Commissioners D. C., July 8, 1880.
Grade.....	3,443.72	10	344.37	.....	.....	344.37	Order of Commissioners D. C., June 22, 1881.
	13,793.72		8,315.20	78.33	1,844.95	10,238.48	

ULATION.

Square yards.	Cost.
85,421.02	\$173,520.28
50,853.05	108,504.55
2,888.93	7,661.03
.....	10,238.48
139,163.00	299,924.34
	5,364.00
.....	305,288.34

TABLE B.—Contracts for improvement

E.—REPAIRS TO BITU

No. of contract.	Date.	Name of contractor.	Location.		
			Street.	From—	To—
288	July 23, 1880	J. S. Baldwin	G street south	4½ street west.....	11th street west...
291	July 23, 1880	Cranford & Filbert..	O street north	8th street west....	13th street west...
289	July 23, 1880	Cranford & Filbert..	6th street..... P street..... Alley..... Alley..... New York avenue 3d street..... 14th street..... Massachusetts av. Q street..... Alley..... Alley..... G street north	D street..... At bridge..... Square 215..... Square 159..... 9th street..... Maryland avenue. H street..... Intersection 4th and 5th sts. 19th street..... Square 250..... Square 248..... 5th street west...	E street..... 13th street..... Indiana avenue.. New York avenue Connecticut ave.. 7th street west...
			B street north	Delaware avenue..	1st street east....
			Various streets....	.....	.....
321	June 10, 1881	Bailey & Fletcher....	Pa. av. (north side)	2d street east.....	8th street east....
			Pa. av. (north side) Vermont avenue.. F street north..... H street north	15th street west... K street west..... 13th street west... 15th street west...	15½ street west... Thomas Circle... 14th street west... Vermont avenue..

and repair of streets.—Continued.

MINORS PAVEMENTS.

Description and character of work.	No. of square yards.	Cost per square yard.	Contract work.	Extra work.	Cost of material.	Total cost.	Remarks.
Resurface with asphalt wearing surface, 2½ inches in thickness when compressed.	10,006.79	\$1 29½	\$16,042 66	\$282 83	\$504 99	\$16,830 48	Includes base, binder, relaying granite block pavement, &c.
Resurface with asphalt wearing surface 2½ inches in thickness when compressed.	4,755.55	1 27	7,422 80	206 67	8 93	7,638 40	Includes base, binder, relaying granite block pavement, &c.; \$472.93 refunded by R. R. Co.
Minor repairs	1,832.96	1 20				2,199 55	
	255.62	63				160 04	
	1,216.88	63				766 63	
	150.55	63				94 84	
	914.33	63				576 02	
	1,264.49	63				796 62	
	2,352.66	63				1,482 17	
	537.29	1 20				644 74	
	632.61	1 20				759 13	
	671.40	1 20				805 68	
	280.00	63				176 40	
	111.00	63				69 93	
	749.52	1 20				974 37	Expended in repairing pavement of D. W. Bailey, failing contractor. To be recovered by suit on his bond.
	259.95	1 20				337 93	Expended in repairing pavement of D. W. Bailey, failing contractor. To be recovered by suit on his bond.
	17,300.37	63 1 20				15,360 51	Includes base, binder, cutting out, and other incidental work.
Resurface with asphalt wearing surface.	2,014.76	1 15	2,316 97	165 55		2,422 50	Includes cost of cutting out. Incomplete.
							Incomplete.
							Do.
							Do.
							Do.
Total cost of inspection of above work.						2,256 00	
Total	45,306.74		25,782 43	595 05	513 92	54,320 95	

APPENDIX X 9—Continued.

F.—MISCELLANEOUS CONTRACTS.

No. of contract.	Date.	Name of contractor.	Character of work.	Total cost.
249	May 2, 1880	J. W. McKnight & Co.....	Furnish granite paving blocks.....	\$25,720 96
255	June 15, 1880	H. L. Cranford.....	Sprinkling, sweeping, and cleaning streets	26,506 17
258	June 25, 1880	R. Carns.....	Sprinkling, sweeping, and cleaning alleys	4,275 00
247	Feb. 27, 1880	Washington Gas Light Company.	Light, extinguish, and furnish gas for street lamps of Washington for six months, from July 1, 1880, to January 1, 1881.	52,613 86
314	Feb. 9, 1881	Washington Gas Light Company.	Light, extinguish, and furnish gas for street lamps of Washington for six months ending June 30, 1881.	52,377 64
248	Feb. 29, 1880	Georgetown Gas Company..	Light, extinguish, and furnish gas for street lamps of Georgetown from July 1, 1880, to January 1, 1881.	6,234 06
315	Mar. 8, 1881	Georgetown Gas Company..	Light, extinguish, and furnish gas for street lamps in Georgetown from January 1, to June 30, 1881.	6,015 00
.....	July 14, 1880	Richmond Granite Company*	Furnishing granite paving blocks.....	17,933 53
.....	Oct. 2, 1880	Old Dominion Granite Company.*	.....do.....	21,873 53
.....	Jan. 14, 1881	J. B. Mitchell*.....	.....do.....	1,939 00
298	July 23, 1880	Joseph Paul.....	Furnish broken stone.....	4,330 71
310	July 19, 1880	Pittsburgh Bridge Company	Reconstruct the M-street bridge over Rock Creek.	5,603 87

* Order of Commissioners, D. C.

APPENDIX X 10.

TABLE C.—Schedule of streets requiring immediate attention.

1. REPLACEMENT OF WOOD PAVEMENTS.

	Square yards.
New Jersey avenue from D to M streets.....	26,000
Massachusetts avenue from First to Third streets.....	4,000
Rhode Island avenue from Ninth to Thirteenth streets.....	9,000
New Hampshire avenue from M to Q streets.....	11,600
Pennsylvania avenue from circle to Twenty-sixth street.....	5,000
Fourteenth street west, from M to Boundary streets.....	15,000
Fifteenth street west, from Pennsylvania avenue to B street.....	7,400
Second street east, from Pennsylvania avenue to D street.....	4,800
D street south, from Second to Third street east.....	1,700
Fourth street east, from East Capitol street to Pennsylvania avenue.....	4,600
Fifth street east, from East Capitol street to Pennsylvania avenue.....	5,400
M street north, from New Hampshire avenue to Twenty-sixth street.....	9,000
Thirty-third street west, from N to P streets.....	2,000
Twenty-ninth street west, from N to P streets.....	3,000
Total.....	108,500

108,500 square yards, at \$2.25, \$244,125.

2. REPLACEMENT OF STONE PAVEMENTS.

Seventh street west, from Q to Boundary streets.....	8,400
--	-------

8,400 square yards, at \$2.50, \$21,000.

3. REPLACEMENT OF MACADAM.

Eleventh street southeast, from M to O streets.....	8,000
---	-------

8,000 square yards, at \$2.50, \$20,000.

4. LAYING NEW PAVEMENTS.

F street south, from South Capitol to Fourth-and-a-half streets 8,300
8,300 square yards, at \$2.50, \$20,750.

5. GRADING AND REGULATING.

North Capitol street from D to K streets	\$9,000
R street north, from Sixteenth to Boundary streets	4,000
S street north, from Sixteenth to Boundary streets	4,000
U street north, from Sixteenth to Boundary streets	2,000
V street north, from Sixteenth to Boundary streets	4,000
W street north, from Fourteenth to Boundary streets	1,000
Seventeenth street west, from Q to Boundary streets	3,000
Eighteenth street west, from Q to Boundary streets	3,000
Total	30,000

6. RELAYING SIDEWALK ON NORTH SIDE OF PENNSYLVANIA AVENUE.

10,000 square yards, at \$2, \$20,000.

RECAPITULATION.

1. Replacement of wood pavements, 108,500 square yards	244,125
2. Replacement of stone pavement, 8,400 square yards	21,000
3. Replacement of macadam, 8,000 square yards	20,000
4. Laying new pavements, 8,300 square yards	20,750
5. Grading and regulating new streets	30,000
6. Laying sidewalks	20,000
Total	\$355,825

APPENDIX X 11.

TABLE D.—Schedule of work necessary for repair, improvement, and completion of sundry streets, avenues, and suburban roads in the District of Columbia January 1, 1882.

RECAPITULATION.

	Square yards of carriageway.	Estimated cost.
A. Replacing wood pavements	294,757.00	\$633,627 55
B. Replacing cobble pavements	99,713.00	259,847 15
C. Replacing macadam pavements	80,939.00	174,018 85
D. Laying new pavements	118,002.00	305,522 10
E. Regulating and grading unimproved streets	995,188.00	963,919 80
F. Relaying sidewalks	25,698.60	51,397 30
G. Improving suburban roadways, 97,115 linear feet		194,230 00
Total	1,614,297.60	2,582,562 65

Schedule of work necessary for repair, improvement, and completion of sundry streets, avenues, and suburban roads in the District of Columbia.

CLASS A.—REPLACEMENT OF WOOD PAVEMENTS.

Street.	From—	To—	Width of carriage way.	Carriage-way, at \$2.15, square yards, at	Grading, on bio yards.	Old pavement re-moved, square yards.	Curb, linear feet.	Flagging, linear feet.	Sidewalk, square yards.	Cobble, square yards.	Total cost.
1st street west.....	Pennsylvania ave.....	Maryland avenue.....	53	2 167							\$4,659 95
2d street west.....	B street south.....	do.....	32	3 848							1,823 20
5th street west.....	C street north.....	Mount Vernon Place.....	30	3 502							7,529 30
Do.....	D street north.....	do.....	30	1 183							2,964 95
Do.....	N street north.....	B street north.....	30	5 864							18,057 10
9th street west.....	P street north (east side).....	Boundary.....	18.5	5 086							12,246 40
10th street west.....	O street north.....	B street north.....	32	5 898							12,680 70
12th street west.....	do.....	Rhode Island ave.....	32	1 356							3,940 40
14th street west.....	M street north (west side).....	Boundary.....	28	15 251							32,789 05
15th street west.....	B street north.....	Pennsylvania ave.....	43	7 342							15,785 30
Do.....	S street north.....	Boundary.....	32	6 919							14,875 85
16th street west.....	N street north.....	do.....	60	5 140							64,064 00
16th street west.....	K street north.....	I street north.....	32	1 394							2,946 00
18th street west.....	do.....	N street north.....	32	5 193							12,520 45
22d street west.....	do.....	M street north.....	32	5 193							6,712 30
22d street west.....	Pennsylvania ave.....	do.....	32	7 792							3,916 69
24th street west.....	K street north.....	do.....	32	1 792							3,708 75
26th street west.....	N street north.....	Pennsylvania ave.....	32	4 183							8,963 45
28th street west.....	M street north.....	do.....	30	2 600							4,300 00
32d street west.....	Pennsylvania ave.....	do.....	35	4 800							10,520 00
34th street east.....	C street south.....	do.....	35	2 611							4,325 65
4th street east.....	East Capitol street.....	do.....	35	4 647							9,941 05
5th street east.....	do.....	C street south.....	40	5 432							11,976 80
6th street east.....	do.....	do.....	35	1 732							2,842 30
8th street east.....	D street south.....	Pennsylvania ave.....	35	1 732							2,399 35
Do.....	K street south.....	do.....	40	1 730							3,115 00
B street south.....	1st street west.....	M street south.....	55	2 984							6,746 85
C street south.....	4th street west.....	do.....	35	4 268							7,015 45
D street south.....	2d street east.....	6th street west.....	30	3 363							7,015 45
E street south.....	N 4th street.....	3d street east.....	56	5 687							12,134 95
F street south.....	N 6th street.....	8th street west.....	52	2 418							5,168 70
L street north.....	20th street west.....	do.....	32	7 000							15,050 00
M street north.....	New Hampshire ave.....	Rock Creek.....	32	8 980							19,218 95

N street north	5th street west	32	4,800				9,302 50
O street north	10th street west	32	1,518				3,237 25
P street north	14th street west	32	27,719				44,505 00
East Capitol street	20th street west	32	5,686				10,080 80
Do	4th street east (north side)	18					7,924 90
Do	9th street east	50	8,019				8,490 85
Pennsylvania avenue	Washington Circle (south side)	33	5,088				10,822 75
Maryland avenue	1st street west	60	4,713				10,192 95
Missouri avenue	3d street west	35	2,476				5,323 40
North Carolina avenue	4th street west	40	2,089				4,402 85
New Hampshire avenue	6th street east	50	11,635				25,015 25
Massachusetts avenue	Q street north	50	3,968				8,549 60
Do	3d street west	18, 5	3,077				6,615 55
New Jersey avenue	4th street west (north side)	60	13,587				29,212 05
Do	D street north	50	17,700				38,055 00
Rhode Island avenue	5th street west	50	16,792				36,109 80
Water street	1st street south	40	2,089				5,794 25
C street north	3d street east	33 & 32	3,105				7,759 75
Do	2d street west	30	5,115				6,692 85
1st street west	D street west	32	553				1,183 25
Do	H street west	32	1,353				2,008 85
			294,757				633,627 55

The estimated cost of repaving includes all necessary incidental work, such as relaying curbs and sidewalks, grading, repaving drains, &c. 300¢ ft.

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Street	From—	To—	Width of carriage-way.	Carriage-way, at square yards, at \$2.15.	Grading, cubic yards, at 20 cents.	Curb, linear feet, at 6 cents.	Flagging, linear feet.	Sidewalk, square yards, at 50 cents.	Old pavement re- moved, square yards, at 10 cents.	Total cost.
44 street west.....	Missouri avenue.....	D street north.....	50	6,549	2,074	2,280	.....	2,922	8,711	\$15,983 85
5th street west.....	D street north.....	G street north.....	46	5,772	4,054	2,190	.....	2,033	6,254	15,447 90
6th street west.....	Missouri avenue.....	Louisiana avenue.....	60	4,766	2,830	1,310	.....	1,603	4,768	12,174 60
Do.....	G street north.....	New York avenue.....	32	8,294	8,890	3,500	.....	4,437	13,335	23,318 60
7th street west.....	G street north.....	Boundary street.....	51	8,379	5,643	3,764	.....	4,616	8,379	20,728 54
10th street west.....	D street north.....	E street north.....	32	1,507	1,005	848	.....	1,130	2,402	4,297 13
14th street west.....	B street north.....	F street north.....	55	12,394	10,482	2,702	.....	3,602	15,723	32,278 92
8th street east.....	D street south.....	K street south.....	55	9,488	3,461	4,059	.....	4,942	9,488	20,920 34
C street north.....	44 street west.....	7th street west.....	40	4,772	1,590	2,361	.....	2,361	5,408	12,358 78
H street north.....	4th street west.....	do.....	35	7,000	7,405	3,030	.....	3,520	11,341	19,769 10
Do.....	14th street west.....	16th street west.....	55	2,464	1,643	782	.....	528	2,464	6,184 12
Do.....	Connecticut avenue.....	Pennsylvania ave.....	50	6,368	4,850	2,661	.....	3,348	9,081	17,020 26
I street north.....	8th street west.....	9th street west.....	35	788	680	481	.....	296	1,378	2,146 86
Do.....	10th street west.....	11th street west.....	32	889	1,037	530	.....	530	1,555	2,646 05
Do.....	18th street west.....	Pennsylvania ave.....	40	4,871	3,246	1,764	.....	2,491	4,871	13,030 85
K street north.....	North Capitol street.....	3d street west.....	50	10,304	6,868	3,385	.....	6,170	10,304	27,482 10
Indiana avenue.....	1st street west.....	do.....	60	5,200	7,770	1,960	.....	2,054	10,363	14,101 35
			99,713	73,599		35,884		46,833	125,793	299,847 15

The estimated cost includes all necessary incidental work, such as narrowing the roadway, removing old material, laying new curbs and sidewalks, grading, repaving drains, &c.

CLASS C.—REPLACEMENT OF MACADAM PAVEMENTS.

Street.	From—	To—	Width of carriage way.	Carriage way, at square yards, at \$2.15.	Grading, cubic yards.	Curb, linear feet.	Flagging, linear feet.	Sidewalk, square yards, at 50 cents.	Old pavement removed, square yards.	Total cost.
4th street east	Pennsylvania ave	C street south	35	350						\$752 50
6th street east	do	K street south	35	9, 643						21, 107 45
11th street east	do	Eastern Branch	35	23, 022						48, 107 70
C street south	do	4th street east	22	1, 453						3, 183 45
C street west	3d street east	27th street west	40	14, 120						30, 263 00
New York avenue	Pennsylvania ave.	New Jersey avenue	50	12, 000						26, 883 00
Pennsylvania avenue	7th street west	11th street east	2 of 25	9, 238						19, 800 70
	8th street east	15th street east	50	10, 553						23, 230 95
New York avenue	New Jersey avenue	North Capitol street	50	80, 839						174, 013 85

The estimated cost includes all necessary incidental work, such as removing old material, laying new curbs and sidewalks, repaving drains, grading, &c.

Schedule of work necessary for repair, improvement, and completion of sundry streets, &c.—Continued.

CLASS D.—LAYING NEW PAVEMENTS.

Street	From—	To—	Width of carriage way.	Carriage-way, at square yards, at \$2 lb.	Grading, cubic yards, at 20 cents.	Curb, linear feet, at 50 cents.	Flagging, linear feet.	Sidewalk, square yards, at 50 cents.	Old pavement removed, square yards.	Total cost.
Water street.	M street south.	P street south.	60	7,847	9,232	868	.....	964	.....	\$18,833 45
P street south.	44 street.	Water street.	32	1,209	2,483	379	.....	422	.....	3,161 05
H street south.	do.	do.	32	8,740	2,483	1,441	.....	1,901	.....	10,058 00
G street south.	7th street.	do.	32	8,371	2,246	1,710	.....	1,900	.....	9,501 85
F street south.	1st street west.	44 street west.	32	5,095	3,390	2,746	.....	3,051	.....	14,530 75
South Capitol street.	do.	do.	32	8,288	4,000	3,654	.....	4,060	.....	22,596 20
3d street west.	E street south.	F street south.	32	6,755	4,500	2,460	.....	3,844	.....	19,075 25
O street north.	13th street west.	Vermont avenue.	32	471	.....	.....	.....	.....	.....	1,012 65
2d street east.	Virginia avenue.	L street.	32	2,840	1,892	903	.....	1,003	.....	7,437 40
Virginia avenue.	7th street west.	South Capitol street.	60	25,860	17,240	5,564	.....	7,418	.....	63,311 40
New Hampshire avenue.	E street north.	G street north.	50	4,517	6,500	814	.....	1,085	.....	11,961 05
Vermont avenue.	R street north.	Boundary street.	50	12,777	13,800	2,680	.....	3,573	.....	33,357 05
M street south.	4th street east.	11th street east.	32	8,950	12,585	3,596	.....	8,995	.....	25,555 00
N street south.	New Jersey avenue.	5th street west.	32	3,100	4,360	1,648	.....	1,881	.....	7,276 50
Q street north.	7th street west.	14th street west.	32	10,155	3,385	.....	.....	.....	.....	22,510 35
Do.	17th street west.	19th street west.	32	4,612	4,900	2,007	.....	2,220	.....	13,014 30
Do.	20th street west.	21st street west.	32	1,450	900	930	.....	1,033	.....	4,291 00
18th street west.	P street north.	Q street north.	32	1,703	1,016	1,016	.....	1,129	.....	3,661 45
H street south.	1st street west.	44 street west.	32	5,262	3,506	2,238	.....	2,486	.....	14,376 90
				118,002	98,507	35,654	.....	41,625	.....	306,522 10

The estimated cost includes grading, removing old material, laying curbs and sidewalks, and all other necessary incidental work.

CLASS E.—REGULATING AND GRADING UNIMPROVED STREETS.

Street.	From—	To—	Width of carriage way.	Carriage-way, square yards, at 12 cents.	Grading, cubic yards, at 20 cents.	Old pavement removed, square yards.	Curb, linear feet, at 50 cents.	Flagging, linear feet, at 20 cents.	Sidewalk, square yards, at 50 cents.	Cobble, square yards, at 30 cents.	Total cost.
1st street west	I street north	Boundary	32	12,270	10,353		308	6,308	7,009	2,102	\$12,003 70
2d street west	R street south	Virginia avenue	32	7,276	10,381		290	2,290	4,444	2,690	9,080 22
3d street west	New Jersey ave	Boundary	32	7,666	8,638		350	2,350	4,255	1,315	9,433 52
Do	F street south	N street south	32	9,777	6,658		560	2,560	3,317	1,688	9,814 54
4th street west	O street north	Boundary	32	9,251	7,900		522	2,522	3,146	1,944	9,600 72
5th street west	D street south	Water street	32	7,390	4,868		274	2,274	4,140	1,434	7,793 06
6th street west	do	do	32	7,390	4,868		274	2,274	4,140	1,434	7,793 06
8th street west	S street north	Boundary	32	7,117	6,940		308	2,308	4,109	1,252	7,034 50
10th street west	Vermont avenue	do	32	10,343	8,727		396	2,396	4,836	1,252	7,811 64
12th street west	Maryland avenue	do	32	10,583	8,727		396	2,396	4,836	1,252	7,811 64
13th street west	do	do	32	10,583	8,727		396	2,396	4,836	1,252	7,811 64
Do	Corcoran street	Water street	32	10,958	8,144		891	2,891	5,351	1,788	10,204 66
13th street west	do	do	32	10,958	8,144		891	2,891	5,351	1,788	10,204 66
17th street west	Maryland avenue	Boundary	32	8,892	1,872		343	2,343	4,890	1,358	10,298 64
18th street west	do	do	32	8,892	1,872		343	2,343	4,890	1,358	10,298 64
21st street west	Q street north	Boundary	32	9,454	5,318		435	2,435	4,892	1,458	7,231 66
23d street west	do	do	32	9,300	5,318		435	2,435	4,892	1,458	7,231 66
25th street west	do	do	32	9,484	1,980		435	2,435	4,892	1,458	7,231 66
26th street west	M street north	do	32	9,684	15,000		622	2,762	4,190	1,543	9,015 78
27th street west	G street north	do	32	9,684	15,000		622	2,762	4,190	1,543	9,015 78
28th street west	do	do	32	9,684	15,000		622	2,762	4,190	1,543	9,015 78
30th street west	M street north	do	30	9,000	8,100		777	2,777	3,777	1,833	8,989 92
32d street west	do	do	30	9,000	8,100		777	2,777	3,777	1,833	8,989 92
34th street west	Prospect street	do	40	12,733	7,640		892	2,892	5,135	2,346	12,424 16
35th street west	O street north	do	40	12,467	7,640		892	2,892	5,135	2,346	12,424 16
1st street east	Cornwall street	Boundary	32	12,465	22,722		583	2,583	7,291	2,380	14,832 26
Do	do	do	32	12,465	22,722		583	2,583	7,291	2,380	14,832 26
2d street east	Cornwall street	Boundary	32	8,379	18,048		583	2,583	7,291	2,380	14,832 26
Do	do	do	32	8,379	18,048		583	2,583	7,291	2,380	14,832 26
3d street east	H street north	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
4th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
5th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
6th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
7th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
8th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
9th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
10th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
11th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
12th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
13th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
14th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
15th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
16th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
17th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
18th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
19th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
20th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
21st street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
22d street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
23d street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
24th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
25th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
26th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
27th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
28th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
29th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
30th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
31st street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
32d street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
33d street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
34th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
35th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
36th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
37th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
38th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
39th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
40th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
41st street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
42d street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
43d street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
44th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
45th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
46th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
47th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
48th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
49th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
50th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
51st street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
52d street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
53d street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
54th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
55th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
56th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
57th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
58th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
59th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
60th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
61st street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
62d street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
63d street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
64th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
65th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
66th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
67th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
68th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
69th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
70th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
71st street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
72d street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
73d street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
74th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
75th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
76th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
77th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
78th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
79th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
80th street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
81st street east	do	do	32	8,453	18,048		583	2,583	7,291	2,380	14,832 26
82d street east	do	do	32	8,453	18,0						

Schedule of work necessary for repair, improvement, and completion of sundry streets, &c.—Continued.

CLASS E.—REGULATING AND GRADING UNIMPROVED STREETS.

Street.	From—	To—	Width of carriage-way.	Carriage-way, square yards.	Grading, cubic yards.	Old pavement removed, square yards.	Curb, linear feet.	Flagging, linear feet.	Sidewalk, square yards.	Cobble, square yards.	Total cost.
E street north	New Jersey ave	Delaware avenue	32	4,900	6,650		1,723	1,723	1,914	574	\$4,241 30
G street north	North Capitol	8th street	32	14,285	20,080		5,524	5,524	6,137	1,841	13,211 40
I street north	1st street east	7th street east	32	9,475	13,830		5,050	5,050	5,611	1,663	10,796 40
L street north	New Jersey ave	Boundary	32	21,550	18,012		10,987	10,987	12,248	3,693	21,057 80
N street north	do	do	32	14,763	12,456		7,762	7,762	8,624	2,587	14,784 26
Do	21st street west	27th street west	32	9,325	8,037		5,102	5,102	5,660	1,700	14,600 30
O street north	20th street west	Rock Creek	32	4,898	9,776		6,830	6,830	7,588	2,276	12,957 88
Do	4th street west	Boundary	32	12,814	10,812		3,792	3,792	4,213	1,264	7,219 10
P street north	New Jersey ave	North Capitol	32	7,200	6,075		1,906	1,906	2,117	635	3,636 24
Do	32d street west	35th street west	30	3,477	3,120		3,542	3,542	3,935	1,180	6,691 62
Q street north	New Jersey ave	North Capitol	32	6,756	5,400		2,200	2,200	2,444	733	4,077 64
Do	32d street west	35th street west	30	3,987	3,588		3,654	3,654	4,060	1,218	7,004 08
R street north	16th street west	Boundary	32	7,449	6,285		1,244	1,244	1,337	641	3,639 64
Do	32d street west	35th street west	30	3,507	3,156		5,222	5,222	5,602	1,740	10,012 08
S street north	16th street west	Boundary	32	10,229	8,631		1,492	1,492	1,646	497	3,064 34
Do	32d street west	35th street west	30	2,987	2,418		2,932	2,932	3,290	984	5,703 28
T street north	Vermont avenue	Boundary	32	6,824	5,014		1,156	1,156	1,284	385	2,324 74
Do	32d street west	35th street west	30	2,827	2,274		4,040	4,040	4,444	1,333	7,390 06
U street north	14th street west	Boundary	32	8,078	4,544		2,240	2,240	2,488	746	3,982 60
Do	16th street west	do	32	4,540	1,910		4,000	4,000	4,444	1,333	7,390 06
V street north	Boundary	do	32	15,182	8,540		7,760	7,760	8,622	2,586	14,148 64
W street north	do	do	32	9,985	5,448		5,046	5,046	5,606	1,682	9,091 10
Do	28th street west	Rock Creek	32	1,987	1,688		1,102	1,102	1,224	366	2,069 20
Do	Potomac street	35th street west	30	4,700	7,068		2,580	2,580	2,866	860	5,071 00
Prospect street	8th street east	11th street west	32	3,474	5,862		1,736	1,736	1,928	578	3,247 48
B street south	New Jersey ave	New Jersey ave	32	14,485	20,370		6,856	6,856	7,616	2,285	15,104 90
C street south	7th street west	11th street east	32	4,083	6,000		2,350	2,350	2,611	783	5,068 56
Do	4th street east	New Jersey ave	32	9,469	20,850		4,396	4,396	4,864	1,465	9,261 84
D street south	3d street east	6th street east	32	2,251	1,500		1,060	1,060	1,177	353	2,588 02
Do	9th street east	11th street east	32	2,251	1,500		1,120	1,120	1,244	379	1,372 72
Do	4th street	do	32	25,751	26,650		10,966	10,966	12,164	3,655	20,290 42
E street south	7th street west	Water street	32	8,874	15,144		4,486	4,486	4,986	1,405	10,174 34
Do	1st street west	South Capitol	32	3,143	7,072		1,378	1,378	1,531	459	3,659 36
G street south	1st street east	11th street east	32	9,148	20,664		4,904	4,904	5,381	1,534	9,653 46
Do	1st street west	Canal	32	2,726	6,212		4,497	4,497	4,963	1,466	3,598 62
H street south	Water	11th street east	32	52,831	56,386		14,114	14,114	15,682	4,704	30,619 22

K street south	do	32	31,797	44,790	13,500	13,500	15,000	4,500*	31,054 44
L street south	do	32	31,797	44,790	13,500	13,500	15,000	4,500*	31,054 44
North Capitol	D street north	50	31,889	19,130	12,400	12,400	14,393	4,390	20,922 90
South Capitol	N street south	50	13,167	10,490	4,152	4,152	5,269	1,117	10,012 72
East Capitol	11th street east	{ 30 } 6,113	13,167	10,490	4,152	4,152	5,269	1,117	11,013 24
Boundary	15th street east	40	52,444	4,085	1,200	1,200	1,900	400	3,410 06
Delaware avenue	Boundary	50	30,078	70,800	20,400	20,400	23,111	6,933	48,643 68
New Hampshire avenue	U street south	50	30,767	33,228	9,000	9,000	12,000	3,000	27,637 36
do	Boundary	50	12,454	9,774	2,858	2,858	3,810	952	7,232 00
New Jersey avenue	U street north	50	12,454	13,494	3,500	3,500	4,866	1,166	9,330 68
South Carolina avenue	11th street east	50	20,006	28,908	5,000	5,000	6,666	1,666	15,328 52
Virginia avenue	South Capitol	50	29,439	31,784	7,000	7,000	9,666	2,333	20,324 38
Concoran	do	30	1,727	2,130	852	852	947	284	1,786 34
New York avenue	17th street west	50	7,223	6,500	2,240	2,240	2,986	746	5,451 44
Massachusetts avenue	North Capitol	50	21,738	23,466	6,438	6,438	8,584	2,146	16,743 46
Canal	13th street east	50	11,110	15,000	3,700	3,700	4,830	1,253	9,738 10
Virginia avenue	South Capitol	50	6,666	12,000	1,700	1,700	1,888	556	5,503 72
Boundary	27th street west	50	9,366	12,000	3,052	3,052	3,391	1,017	7,503 92
K street north	Boundary	50	905,188	1,263,191	417,259	417,259	477,284	139,051	963,919 80

*Including \$35,000 for bridge over Rock Creek.

The estimated cost includes grading, laying curbs, gutters, and sidewalks, graveling the roadway, constructing drains, and all other necessary incidental work.

CLASS F.—RELAYING SIDEWALKS WITH FLAG OR ARTIFICIAL STONE.

Pennsylvania avenue	1st street west	15th street west	41 82	25,608 1/2					\$51,397 20
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CLASS G.—OPENING AND IMPROVING SUBURBAN STREETS.

Columbia Heights	16,509								\$23,013 00
Meridian Hill	16,580								\$23,130 00
Mount Pleasant	14,560								\$20,138 00
Widow's Mite	2,773								5,844 00
Pleasant Plains	1,933								5,866 00
Todd, Wright, and Brown	14,380								\$8,700 00
Howard University	12,183								\$8,700 00
Keating subdivision	1,489								\$4,323 00
Anacostia	16,750								\$3,973 00
	*97,115								\$21,500 00
									194,230 00

*Linear feet, at \$2.

Statement of character and extent of street pavements in Washington and Georgetown, July 1, 1881—Continued.

WASHINGTON.

Street.	From—	To—	Carriage way.						Remarks.	
			Width.	Asphalt or concrete.	Granite.	Wood.	Cobble and blue rock.	Macadam.		Gravel.	Unimproved.
6th street west	Louisiana ave	F street north	Feet.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Unimproved from Maryland avenue to Massachusetts avenue. O. c. walk, curb, and gutter, A to Pennsylvania avenue. O. c. walk, curb, and gutter. Cobble bet. R. R. tracks. Do. 3,400 yds. bet. R. R. tracks. Cobble bet. R. R. tracks. O. c. walk, curb, and gutter.
Do	F street north	G street north	32	4,800						
Do	G street north	Massachusetts ave.	32	975						
Do	Massachusetts ave.	New York ave.	35				2,680			
Do	New York ave.	Boundary	35	16,636			4,000			
Do	Pennsylvania ave	D street south	60				13,283			
Do	D street south.	Water street.	40		23,179					
Do	East Capitol.	Massachusetts ave.	32					2,400	2,500	
Do	Massachusetts ave	Boundary	32					12,100		
Do	East Capitol	Pennsylvania ave.	32					5,831		
Do	Pennsylvania ave.	D street south	32			890			8,890	
Do	D street south	M street south.	32							
7th street west (west side).	Market Space.	D street north	18		506*					
7th street west	Pennsylvania ave.	do	51	1,579						
Do	D street north	Q street north	51		28,023*		755			
Do	Q street north	Boundary	51				10,861			
Do	Pennsylvania ave.	Water street	51		24,107		10,900			
Do	East Capitol	I street north	40				10,577			
8th street east.	I street north.	Boundary	40					16,489	5,444	
Do	Pennsylvania ave.	Pennsylvania ave.	40					5,511		
Do	East Capitol.	D street south	55			1,209				
Do	Pennsylvania ave.	K street south.	55		10,124					
Do	D street south	M street south.	55			2,864				
Do	K street south	E street north	51			8,652				
Do	E street north	F street north	51	1,963						
Do	F street north	Mt. Vernon Place	30			3,502				
Do	Crossing	do	30	833						
Do	Mt. Vernon Place	L street north	30			1,193				

Statement of character and extent of street pavements in Washington and Georgetown, July 1, 1881—Continued.

WASHINGTON.

Street.	From—	To—	Carriage-way.						Remarks.	
			Width.	Asphalt or concrete.	Granite.	Wood.	Cobble and blue rock.	Macadam.		Gravel.	Unimproved.
12th street west.	E street north	F street north	Feet	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	
Do	W street north	N street north	38	1,627						
Do	N street north	Rhodes Island ave.	32	13,039						
Do	Rhodes Island ave.	Boundary	32	1,322	3,249					11,947
Do	E street north	Water street	40							
13th street east.	East Capitol	Boundary	32		17,306					14,828
Do	do	River	32							
13th street west.	Pennsylvania ave.	E street north	40	685						
Do	E street north	K street north	40		1,741					
Do	F street north	P street north	40	7,772						
Do	F street north	Pennsylvania ave.	40	4,807						
Do	K street north	Circle	32	8,090						
Do	Circle	Boundary	32							13,145
Do	R street south	Maryland avenue	40	5,706						
Do	Maryland avenue	Water street	40							1,036
13½ street west.	Pennsylvania ave.	E street north	35			5,005				
Do	B street south	Maryland avenue	32			4,291				
14th street east.	East Capitol	Boundary	35							11,698
Do	East Capitol	River	32							14,791
14th street west.	B street north	F street south	40		7,841					
Do	do	F street north	40							
Do	F street north	Thomas Circle	70	16,855			11,634			
14th street west (east side).	Thomas Circle	Boundary	70	17,120						
14th street west (west side).	do	do								
14th street west	R street south	Water street	40					6,764		12,196
14th street west	East Capitol	Boundary	32							13,796
15th street east.	do	River	32							
15th street west.	Pennsylvania ave.	E street north	43				7,842			
Do	do	New York ave.	70	4,478				1,322		
Do	New York ave.	K street north	50							
Do	H street north	K street north	50	7,005						

Cobble bet. R. R. tracks.

Statement of character and extent of street pavements in Washington and Georgetown, July 1, 1881—Continued.
WASHINGTON.

Street.	From—	To—	Carriage-way.						Remarks.	
			Width.	Asphalt or concrete.	Granite.	Wood.	Cobble and blue rock.	Macadam.		Gravel.	Unimproved.
			Feet.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.
22d street west	E street north	G street north	32							
Do	G street north	Pennsylvania ave.	32	4,641			2,927			
Do	K street north	M street north	32			3,122				
Do	K street north	Boundary	32							6,660
23d street east	East Capitol	G street north	32							4,196
Do	do	E street south	32							2,560
23d street west	Virginia avenue	E street north	32							
Do	E street north	Upper Water	32							3,413
Do	E street north	Pennsylvania ave.	32							
Do	Pennsylvania ave.	M street north	32			2,752	5,067			
Do	East Capitol	Rock Creek	32							2,689
24th street east	do	E street north	32							4,196
Do	E street north	Pennsylvania ave.	32							2,560
24th street west	E street north	E street south	32							2,068
Do	Pennsylvania ave.	Pennsylvania ave.	32				5,192			
Do	M street north	Rock Creek	32				2,540			
25th street west	Virginia avenue	River	32							4,128
Do	Pennsylvania ave.	Virginia avenue	32				945			5,735
Do	do	Rock Creek	30							3,753
26th street west	G street north	D street north	32						3,378	
Do	K street north	E street north	32				5,042			
Do	Pennsylvania ave.	Pennsylvania ave.	32			1,725				
Do	E street north	M street north	32	919			505			
27th street west	1st street east	9th street east	50	10,511			6,044			8,661
East Capitol										
Do	4th street east	11th street east	50			6,705				
Do	11th street east	Eastern Branch	50							
1st street north	1st street east	2d street east	35	2,788		2,401				25,822

Cobble from K to Penn. ave.

Cobble bet. R. R. tracks.

Concrete full width to 4th, south side to 9th, cobble bet. R. R. tracks.

Full width 9th to 11th, north side 4th to 9th.

Do	2d street east	4th street east	35						2, 748	20, 000	O. c. walk, curb, and gutter from 4th to 11th.
Do	4th street	Eastern Branch	35								
A street south	1st street east	3d street east	35	2, 331	1, 315				8, 750	14, 800	Cobble bet. R. R. tracks.
Do	3d street east	9th street east	35								
Do	Massachusetts ave.	Eastern Branch	35								
B street north	Delaware avenue	Maryland avenue	46	5, 690	1, 819				6, 000	22, 000	Cobble bet. R. R. tracks.
Do	Maryland avenue	11th street east	35								
Do	11th street east	Eastern Branch	35								
B street south	New Jersey ave.	Pennsylvania ave.	45	4, 282	2, 205						
Do	New Jersey ave.	Pennsylvania ave.	45		3, 056				2, 998	4, 946	O. c. walk, curb, and gutter.
Do	Pennsylvania ave.	5th street east	35							13, 945	
Do	7th street east	12th street east	35								
Do	12th street east	Eastern Branch	35								
B street north	12th street east	12th street west	56		3, 132						
Do	6th street west	12th street west	101								
Do	12th street west	17th street west	60	23, 582	18, 686					18, 680	
Do	17th street west	23d street west	60								
Do	17th street west	23d street west	60								
Do	1st street west	Delaware avenue	46	5, 750							
Do	do	New Jersey ave.	35	3, 256*	1, 983						
B street south	do	Maryland avenue	35	2, 100	4, 259						
Do	do	Maryland avenue	35								
Do	6th street west	14th street west	32	12, 840							
C street north	Delaware avenue	2d street east	38 }		3, 605						
Do	3d street east	4th street east	32 }						1, 450	26, 204	
Do	6th street east	Eastern Branch	32							890	
C street south	South Capitol	New Jersey ave	32						6, 192		
Do	New Jersey ave	3d street east	32								
Do	3d street east	4th street east	32		1, 175						
Do	4th street east	6th street east	30		3, 468				1, 985		
Do	6th street east	7th street east	32								
Do	7th street east	19th street east	32							11, 335	O. c. walk, curb, and gutter from 7th to 11th street.
C street north	Delaware avenue	New Jersey ave	46 }		4, 909*						
Do	New Jersey ave	1st street west	63 }			2, 510					
Do	4th street west	2d street west	30								
Do	do	Louisiana ave., in-tersection.	46		3, 113	5, 060					
Do	7th street west	8th street west	46		1, 183*						
Do	9th street west	10th street west	40		1, 656						
Do	10th street west	15th street west	40			7, 820				7, 464	
Do	17th street west	23d street west	32							7, 842	25 feet bet. South Capitol and 1st street west.
C street south	South Capitol	7th street west	35								
Do	7th street west	9th street west	40		4, 450						
Do	9th street west	14th street west	35						6, 723		
D street north	North Capitol	15th street east	32							14, 314	
D street south	South Capitol	New Jersey ave	35							1, 750	
Do	New Jersey ave	2d street east	35						5, 250		

Streets marked thus* have been paved since July 1, 1878.

Statement of character and extent of street pavements in Washington and Georgetown, July 1, 1881—Continued.

WASHINGTON.

Street.	From—	To—	Carriage-way.							Remarks.
			Width.	Asphalt or concrete.	Granite.	Wood.	Cobble and blue rock.	Macadam.	Gravel.	Unimproved.
			Feet.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.
D street south	2d street east	do	35							
Do	3d street east	6th street east	35							3,267
Do	6th street east	7th street east	35							
Do	8th street east	8th street east	30			931				
Do	8th street east	19th street east	32							17,810
D street north.	North Capitol	New Jersey ave	35							1,556
Do	New Jersey ave	3d street west	36	3,818	6,278*		2,266			
Do	6th street west	10th street west	36							
Do	12th street west	14th street west	40				3,614			
Do	14th street west	15th street west	40							
Do	17th street west	23d street west	35			7,961				8,273
Do	17th street west	23d street west	35							7,900
D street south	South Capitol.	44 street west	35							
Do	44 street west	14th street west	35							
Do	North Capitol	Delaware avenue	35				10,815			2,140
E street north.	Delaware avenue	Maryland avenue	35						12,810	
Do	Maryland avenue	15 street east	35							9,042
Do	South Capitol.	New Jersey ave	35							2,334
E street south.	1st street east	6th street east	35							10,920
Do	6th street east	19th street east	35							17,686
Do										
E street north.	North Capitol.	New Jersey ave	35							2,140
Do	New Jersey ave	4th street west	35	4,632*						
Do	5th street west	11th street west	40	9,623*						
Do	11th street west	13th street west	40		2,487*					
Do	13th street west	Pennsylvania ave	41, 48							
Do	14th street west	15th street west	41, 48	1,093*		1,965				
Do	17th street west	19th street west	32							
Do	19th street west	Virginia avenue	32				4,637			
Do	Virginia avenue	23d street west	32				5,831			
Do	23d street west	27th street west	32							
Do	27th street west	14th street west	35	4,285					1,600	
E street south	South Capitol.									5,871
										26,764

Needs gutter and gravel in road-way.

Cobble bet. R. R. tracks.

O. c. walk, curb, and gutter.

Curb set on north side.
O. c. walk, curb, and gutter from 6th to Pennsylvania avenue.

Asphalt blocks.

O. c. walk, curb, and gutter from 2d to 11th street.

Statement of character and extent of street pavements in Washington and Georgetown, July 1, 1881—Continued.

WASHINGTON.

Street.	From—	To—	Carriage-way.						Remarks.	
			Width.	Asphalt or concrete.	Granite.	Wood.	Cobble and blue rock.	Macadam.		Gravel.	Unimproved.
			Feet.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	
I street north.....	9th street west.....	10th street west.....	32	5,090*				1,244		
Do.....	10th street west.....	11th street west.....	32							
Do.....	11th street west.....	15th street west.....	40	8,323						
Do.....	15th street west.....	Vermont avenue.....	56 }	8,322						
Do.....	Vermont avenue.....	17th street west.....	40 }							
Do.....	17th street west.....	18th street west.....	40	2,672				2,115		
Do.....	18th street west.....	19th street west.....	40		2,006					
Do.....	19th street west.....	20th street west.....	40					2,596		
Do.....	20th street west.....	Pennsylvania ave.....	40							
Do.....	Pennsylvania ave.....	26th street west.....	40					13,832		
Do.....	26th street west.....	Water street.....	35							12,776
I street south.....	South Capitol.....	7th street east.....								O. c. walk, curb, and gutter; 4½ to 7th street.
K street north.....	North Capitol.....	Boundary.....	50						19,556	
Do.....	7th street east.....	Canal.....	50							8,378
K street south.....	South Capitol.....	7th street east.....	35							4,938
Do.....	Canal.....	Eastern Branch.....	60							7,430
Do.....	7th street east.....	2 street west.....	35							12,130
K street north.....	North Capitol.....	7th street west.....	50					8,083		
Do.....	3d street west.....	9th st. west { N. S. S. S. }	50 }	8,384						
Do.....	7th street west.....	18th street west.....	50 }	5,418						
Do.....	9th street west.....	Pennsylvania ave.....	50 }	27,551						
Do.....	18th street west.....	24th street west.....	50	12,290						
Do.....	24th street west.....	Water street.....	60		12,571					
K street south.....	South Capitol.....	Boundary.....	35							11,155
L street north.....	North Capitol.....	Eastern Branch.....	32							O. c. walk, curb, and gutter from 1st to 2d street.
L street south.....	South Capitol.....	New Jersey ave.....	35							15,154
Do.....	North Capitol.....	4th street west.....	32	2,073					8,000	24,234
Do.....	New Jersey ave.....		32							O. c. walk, curb, and gutter from 3d to 5th, and 7th to 9th street. O. c. walk, curb, and gutter.

Statement of character and extent of street pavements in Washington and Georgetown, July 1, 1881—Continued.

WASHINGTON.

Street.	From—	To—	Carriage-way.						Remarks.	
			Width.	Asphalt or concrete.	Granite.	Wood.	Cobble and blue rock.	Macadam.		Gravel.	Unimproved.
			Feet.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.
Q street north.	Boundary	5th street west.	32							
Do.	5th street west.	14th street west.	32							
Do.	14th street west.	16th street west.	32	4,806					11,776	
Do.	16th street west.	19th street west.	32							6,048
Do.	19th street west.	20th street west.	32	862						
Do.	21st street west.	22d street west.	32	883						
Q street south.	Boundary	Arsenal.	30							4,367
R street north.	Boundary	9th street west.	32							
Do.	9th street west.	14th street west.	32			7,712				
Do.	14th street west.	16th street west.	32	4,502						9,967
Do.	16th street west.	Boundary.	32							4,900
R street south.	South Capitol	Arsenal.	30							
S street north.	New Jersey ave.	Vermont avenue.	32							
Do.	Vermont avenue.	16th street west.	32	8,811						
Do.	16th street west.	Boundary.	32							8,967
S street south.	South Capitol	Arsenal.	30							4,900
T street north.	Boundary.	Vermont avenue.	32						5,170	
Do.	Vermont avenue.	Boundary.	32					14,707		
T street south.	1st street west.	Arsenal.	30							3,620
U street north.	Vermont avenue.	Boundary.	32						3,136	12,618
U street south.	Arsenal.	Eastern Branch.	30							8,633
V street north.	Vermont avenue.	Boundary.	32							13,335
V street south.	Arsenal.	Eastern Branch.	30							3,134
W street north.	Boundary.	Boundary.	32							10,810
Boundary.	Massachusetts ave.	9th street west.	46					43,414		
Do.	7th street west.	do.	45		2,304					
Do.	6th street west.	do.	46					3,019	5,063	54,248
Do.	6th street west.	15th street east.	46							
Connecticut avenue.	H street north.	I street north.	50	2,210						
Do.	K street north.	Dupont Circle.	50	14,050				4,946		
Do.	Dupont Circle.	Boundary.	50	7,790						
Do.	B street north.	C street north.	50		2,050					
Delaware avenue.										

O. c. walk, curb, and gutter, 17th to 19th streets.

[illegible]

GEORGETOWN.									
Bridge street.....	Rock Creek.....	Congress street.....	50	9, 026	.....	2, 833	.....	.....	Cobble bet R. & tracks.
Do	Congress street.....	Lingan street.....	50	.....	.....	1, 322	.....	Do.	
Water street.....	Rock Creek.....	Aqueduct.....	50	13, 634	.....	.....	.....	.....
Olive street.....	do	Montgomery.....	44	18, 021	.....	.....	.....	1, 566	
Do	Montgomery.....	Washington.....	30	.....	.....	1, 946	.....	.....
Prospect street.....	High	Potomac.....	30	.....	.....	2, 504	.....	.....	O. c. walk, curb, and gutter.
Do	Potomac.....	Lingan.....	30	.....	.....	.....	.....	4, 339	Cobble from Montgomery to Monroe.
Gay street.....	Rock Creek.....	Montgomery.....	30	.....	.....	959	.....	.....
Do	Montgomery.....	High.....	30	2, 525	1, 905	.....	.....	.....
1st street.....	High.....	Fayette.....	30	5, 689	.....	.....	.....	.....	O. c. walk, curb, and gutter.
Do	Fayette.....	Warren.....	30	.....	.....	.....	.....	2, 283	Cobble bet R. & tracks.
2d street.....	High.....	Fayette.....	30	4, 435	.....	780	.....	.....

[illegible]

Streets marked thus * have been paved since July 1, 1878.

SUMMARY STATEMENT.

Carriage-way.	Washington.		Georgetown.		Total.		Miles.
	Length in feet.	Square yards.	Length in feet.	Square yards.	Length in feet.	Square yards.	
Concrete	231,962	1,058,998	5,210	18,240	237,172	1,077,238	44.92
Granite and trap rock	60,988	857,287	15,499	58,802	85,487	448,089	16.18
Wood	84,395	367,060	8,792	13,025	88,187	380,085	16.70
Cobble and blue rock	79,904	502,177	13,800	48,279	98,704	550,456	17.70
Macadam	39,000	214,020	350	1,210	39,350	215,230	7.45
Gravel	151,423	611,080	18,869	52,875	170,292	663,955	32.25
Total improved	656,732	3,140,622	57,520	192,631	714,252	3,333,253	135.20
Unimproved	478,043	1,068,134	22,741	84,311	500,784	1,752,445	96.00

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APPENDIX X 13.

CURRENT REPAIRS OF STREETS AND ALLEYS.

TABLE F.—Statement showing character of work and cost of labor and material from 30, 1880, to July 1, 1881.

	Labor.	Material.	Total.
Salaries and expense of office.....	\$3,900 00	.....	\$3,900 00
Miscellaneous expenses, inspectors, &c.....	3,711 71	.....	3,711 71
Cleaning traps and basins.....	4,193 23	.....	4,193 23
Repairing traps and basins.....	1,424 37	\$631 33	2,055 70
Cleaning and repairing sewers.....	8,311 25	856 20	9,167 45
Repairing streets, avenues, and alleys.....	28,761 67	3,402 85	32,164 52
Repairing bridges (material).....	.....	907 80	907 80
Total.....	50,302 43	5,796 18	56,098 61

Statement showing amount and kind of work done in various localities other than ordinary repairs.

Cobble-stone pavement, new.....	square yards..	9
Gutter-stone, laid, new.....	feet..	2
Curbing set, new.....	do.....	1
Sewer laid, 6-inch, new.....	do.....	1
Sewer laid, 8-inch, new.....	do.....	1
Sewer laid, 12-inch, new.....	do.....	1
Sewer trap, new.....	Number..	1
Hydrant and pump-drops, new.....	do.....	1
Brick pavement, new.....	square yards..	1

ORDINARY REPAIRS.

Cobble pavement relaid.....	square yards..	20
Curb reset.....	feet..	2
Gutter-stone reset.....	do.....	11
Brick pavement relaid.....	square yards..	4
Sewer-traps repaired.....	Number..	1
Streets graveled 9 inches.....	square yards..	65

There has been a large amount of miscellaneous work done during the year, in cleaning gutters, removing snow and ice from carriage-ways, and in attending to the sanitary complaints of the health officers, as well as the casual repairs of dangerous holes, washouts, and obstructions which came under my personal observation.

Very respectfully,

E. M. CHAPIN,
Superintendent Repairs.

SEPTEMBER 15, 1881.

APPENDIX X 14.

TABLE G.—Statement of expenditures on various roads and streets in the county, from 1, 1880, to June 30, 1881.

EASTERN DISTRICT.

Anacostia.....	\$26 80	Race-course.....	\$1
Addison Hill.....	411 20	Ridge.....	4
Bowen.....	24 25	Sheridan avenue.....	14
Benning's.....	224 75	Summer street.....	14
Good Hope.....	180 04	Suit.....	4
Giesboro'.....	117 55	Talbert.....	10
Hamilton.....	196 77	Washington street.....	4
Howardstown.....	9 75	Wheeler road.....	4
Harrison street.....	70 10	Walker road.....	7
Livingston.....	30 00	Material.....	32
Monroe.....	223 75	Salary.....	90
Morris.....	97 00		
Nichols avenue.....	290 60	Total.....	3,83
River.....	56 75		

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WESTERN DISTRICT.

Blagden's Mill.....	\$23 21	Military	\$16 90
Broad Branch	50 25	New Cut	425 75
Brookeville	276 50	Pierce's Mill.....	191 50
Chappell	29 00	River road	23 89
Canal	127 50	Rend Lane	22 00
Daniel's.....	268 50	Swartz.....	17 50
Foxhall Lane	206 25	Tunlaw	234 25
Grant	713 00	Material	152 51
Loughborough	50 50	Salary	900 00
Milk House Ford	3 50		
Murdock Mill	447 25	Total	4,184 76

MIDDLE DISTRICT.

Anacostia road	\$37 50	Old Bladensburg	\$236 37
Benning's.....	1,168 82	Pierce's Mill.....	534 36
Bates	140 00	Pomeroy street	44 88
Bunker Hill	33 25	Patterson avenue	235 17
Brentwood	358 49	Piney Branch	694 49
Bladensburg	92 37	Queen's Chapel.....	344 12
Corcoran	56 70	Riggs	15 75
Columbia	21 00	Rock Creek Church.....	179 25
Fourteenth street.....	220 87	Sargent	169 50
Fifth street extension	80 00	Sligo Mill	29 50
Fair Grounds road.....	1 00	Sherman avenue.....	75 25
Grant avenue	24 00	Seventh street.....	267 99
Glenwood	4 25	Sumner street	302 25
Howard street.....	65 24	Sandy Spring	5 50
Magnolia avenue	35 13	Trumbull street	170 00
Military	46 00	Woodley Lane	277 25
Milk House Ford.....	34 87	Material	1,005 93
Mount Pleasant	1,208 11	Salary	900 00
Mathew's.....	4 00		
New York avenue	61 50	Total	9,244 65

RECAPITULATION.

Eastern road-district.....	\$3,838 79
Western road-district	4,184 76
Middle road-district.....	9,244 65
Seventh-street road (special appropriation)	14,999 75
Total	32,267 95

APPENDIX X 15.

TABLE H.—SPECIAL ASSESSMENT DIVISION.

APPENDIX 1.—Table showing revised assessment of streets, avenues, and roads in the District of Columbia.

No.	By whom assessed.	Street or avenue.	From—	To—	Amount of original assessment.	Net amount of revised assessment.	Decrease.	Increase.
89	Board of public works.	7th street road.			\$46,918 42	\$11,726 98	\$35,191 44	
90	do	Columbia turnpike.			14,722 03	12,513 92	14,222 02	
91	do	Al street (sewer).			14,518 92	17,781 12		
92	Commissioners.	Al street east.	Pennsylvania avenue.	K street south.	14,096 85	17,781 12	6,309 51	
104	do	K street north.	Pennsylvania avenue.	Rock Creek.	22,419 14	17,781 12	4,062 28	
106	do	Q street north.	New Jersey avenue.	14th street.	15,183 15	19,315 53	4,117 02	
110	do	K street north.	4th street east.	11th street east.	4,866 33	7,222 52	152 51	
112	do	K street north.	North Capitol.	17th street east.	5,571 85	8,024 91	2,024 91	
113	do	Y street east.	Washington street.	Pennsylvania avenue.	1,039 83	0,724 53		
114	do	Y street south.	Maryland avenue.	8d street east.	7,265 34	10,309 09		\$3,103 75
115	do	S street east.	James Creek canal.	8d street east.	23,639 19	18,309 03	5,232 56	
116	do	O street north.	C street south.	P boundary east.	1,049 74	1,049 74		
117	do	O street east.	C street south.	P street south.	2,639 19	18,309 03		
118	do	O street north.	New Hampshire avenue.	22d street west.	5,847 80	5,847 80		
119	do	O street east.	New Hampshire avenue.	11th street east.	12,265 50	18,309 03		1,741 55
120	do	Massachusetts avenue.	High street.	11th street east.	7,473 59	8,245 04		5,827 44
121	do	Ball street.	High street.	Monroe street.	6,573 65	8,245 04		5,772 37
122	do	Washington street.	Bridge street.	Walter street.	2,479 45	5,220 44		2,666 33
123	do	W street north.	14th street east.	15th street west.	2,397 75	2,397 75		
124	do	K street south.	East Creek canal.	1st street west.	7,611 83	7,611 83		
125	do	K street north.	East Capitol.	1st street north.	10,168 48	1,291 74	2,554 08	
126	do	10th street east.	28th street east.	7th street west.	6,638 96	1,291 74	2,377 22	
127	do	L street north.	28th street east.	7th street west.	1,731 40	1,291 74	431 20	
128	do	G street north.	22d street west.	Potomac River.	11,546 53	11,025 67	530 86	
129	do	G street north.	do	Potomac River.	5,843 90	6,936 94		
130	do	H street north.	do	Potomac River.	11,015 80	7,176 38	3,839 42	1,005 04
131	do	Virginia avenue.	17th street west.	Rock Creek.	11,015 80	7,176 38	3,839 42	
132	do	19th street east.	H street west.	E street south.	7,768 14	5,775 15	786 14	
133	do	E street south.	8th street east to 10th street east and from 11th street east to Congressional Cemetery.		2,788 81	5,775 15		2,994 34
134	do	K street south.	6th street west.	7th street west.	265 16	631 26		356 10
135	do	N street south.	21st street west.	25th street west.	1,172 79	939 90	343 83	
136	do	E street south.	3d street west.	6th street west.	1,332 62	2,009 46		676 84
141	do	do	7th street west.	14th street west.	1,858 52	817 67	40 88	
142	do	P street south.	4th street west.	Potomac River.	155 39	293 86		140 54
143	do	Washington street.	15th street west.	Washington street.	4,525 74	8,131 44		
144	do	I street south.	New Jersey avenue.	8th street east.	4,494 45	1,489 47	1,394 30	
145	do	South Carolina avenue.	New Jersey avenue.	do	2,346 89	1,571 64	774 74	995 02

145	D street north.....	4th street east.....	15th street east.....	10,070 81	4,008 39	5,479 57	439 49
146	C street north.....	5th street west.....	Water street.....	2,078 69	2,784 07	2,702 62	112 82
147	C street south.....	6th street east.....	Water street.....	7,913 90	4,140 26	3,773 54	
148	E street north.....	7th street west.....	10th street east.....	4,415 44	1,331 22	3,084 22	
149	T street north.....	Vermont avenue.....	Boundary street.....	31,522 11	25,219 37	6,002 74	
150	Sampson street.....	14th street west.....	17th street west.....	6,653 51	3,456 36	3,074 15	
151	Franklin street.....	New Jersey avenue.....	5th street west.....	2,451 34	1,400 90	3,864 54	
152	Carroll street southeast.....	44 street west.....	Water street.....	1,464 53	1,904 02		
153	Q street south.....	New Jersey avenue.....	11th street east.....	2,161 83	2,374 15	2,977 55	
154	10th street west.....	D street south.....	Water street.....	7,032 68	4,075 32	2,758 08	
155	12th street west.....	P street north.....	Q street north.....	8,100 42	6,242 36	511 70	
156	12th street west.....	P street circle.....	do.....	1,281 80	780 10	511 70	
157	Vermont avenue.....	12th street west.....	16th street west.....	1,148 30	607 51	640 49	
158	Ohio avenue.....	Myrtle street.....	18th street east.....	4,553 44	5,553 74	539 19	759 30
159	Myrtle street.....	North Capitol street.....	1st street east.....	1,787 96	1,186 77		
160	Stoddard street.....	Washington street.....	Congress street.....	1,787 96	1,787 96	1,016 34	
161	DeForest street.....	1st street west.....	North Capitol street.....	2,245 81	1,229 47	1,517 60	
162	14th street west.....	B street north.....	B street south.....	1,684 08	1,166 48		
163	do.....	do.....	do.....				
164	7th street west.....	do.....	do.....				
165	14th street west.....	do.....	do.....				
166	A street north.....	2d street east.....	Ohio avenue.....	1,564 50	2,113 15	1,032 06	547 06
167	School street.....	4th street east.....	4th street east.....	3,883 17	2,900 51		
168	South Capitol street.....	G street south.....	K street south.....	298 41	388 16	89 75	68 64
169	Washington street.....	4th street west.....	5th street west.....	476 75	545 26		
170	West Capitol street.....	4th street west.....	6th street west.....	1,397 69	1,069 13	298 56	
171	Green street.....	Bridge street.....	Water street.....	3,748 36	2,991 01	857 35	
172	8th street east.....	East Capitol street.....	Water street.....	11,728 56	8,973 68	2,749 88	
173	Water street.....	High street.....	Lingan street.....	18,086 23	2,308 76	15,777 47	
174	Water street.....	D street north.....	G street north.....	405 96	885 62		479 66
175	Water street.....	44 street west.....	7th street west.....	122 73	220 06		167 95
176	M street south.....	B street west.....	Water street.....	22,919 11	19,654 42	3,264 69	
177	11th street west.....	Maryland avenue.....	C street south.....	67 38	1,92 62		25 24
178	10th street west.....	New Jersey avenue.....	6th street east.....	1,473 30	1,721 22		247 93
179	Virginia avenue.....	Bridge street.....	Beall street.....	654 08	8,579 17	254 91	
180	Monroe street.....	New York avenue.....	Boundary street.....	8,714 68	3,176 62	538 06	
181	1st street west.....	Pennsylvania avenue.....	Georgia avenue.....	2,543 43	3,739 77		1,196 34
182	South Capitol street.....	D street south.....	Canal.....	526 96	419 28	107 58	
183	14th street east.....	B street south.....	Boundary street.....	5,791 17	4,942 15	849 02	
184	U street north.....	13th street west.....	14th street west.....	178 37	283 56		106 19
185	D street north.....	South Capitol street.....	7th street east.....	7,574 41	10,689 46	3,085 06	
186	X street north.....	2d street east.....	4th street east.....	167 86	357 85	189 99	
187	C street north.....	P street north.....	8th street east.....	43 98	249 87	205 84	
188	18th street west.....	P street north.....	Q street north.....	159 70	238 49	48 79	
189	19th street west.....	New York avenue.....	Canal.....	1,912 97	1,968 09	46 01	
190	Virginia avenue.....	44 street west.....	8th street west.....	128 82	332 17	223 35	
191	New Hampshire avenue.....	S street north.....	T street north.....	688 72	321 54	46 48	
192	10th street west.....	6th street north.....	Boundary street.....	566 78	923 36	402 58	
193	13th street west.....	T street north.....	7th street north.....	323 14	670 34	231 20	
194	M street north.....	6th street east.....	8th street east.....	750 08	1,216 16	736 06	
195	V street north.....	14th street west.....	9th street west.....	711 97	728 48	42 58	
196	7th street east.....	Pennsylvania avenue.....	M street south.....	541 95	836 36		314 14
197							733 54
198							
199							
200							

Table showing revised assessment of streets, avenues, &c.—Continued.

No.	By whom assessed.	Street or avenue.	From—	To—	Amount of original assessment.	Net amount of revised assessment.	Decrease.	Increase.
201	Commissioners	B street south	1st street west	Maryland avenue	\$2,085 94	\$2,083 49	\$52 00
202	do	New York avenue	17th street west	22d street west	11,300 96	7,062 43	4,238 43
204	do	E street west	K street south	M street south	1,968 50	1,851 98	4, 16 52
205	do	22d street west	North Capitol street	1st street east	456 27	955 50	\$499 23
206	do	11th street east	K street north	H street north	638 71	867 61	258 90
207	do	24th street east	Massachusetts avenue	H street north	7,967 73	7,709 70	258 03
208	do	1st street east	C street north	Maryland avenue	7,702 17	7,453 03	248 94
209	do	24th street west	New Jersey avenue	North Capitol street	7,825 19	7,338 03	486 16
210	do	25th street west	Virginia avenue	Observatory	466 77	667 04	200 87
211	do	D street south	Pennsylvania avenue	M street north	861 67	924 96	78 09
212	do	G street south	7th street east	8th street east	570 54	512 53	58 21
213	do	South Capitol street	B street west	1st street west	843 79	816 49	27 30
214	do	B street east	D street south	1,194 42	1,512 79	348 37
215	do	10th street east	10th street east	187 37	336 91	169 54
216	do	New Jersey avenue	North Capitol street	892 45	892 45
217	do	6th street west	Potomac River	64 56	122 98	58 43
218	do	K street south	D street east	227 85	404 27	176 42
219	do	East Capitol street	Massachusetts avenue	315 53	303 05	10 47
220	do	K street north	H street south	1,047 02	348 30	700 72
221	do	Maryland avenue	D street north	6,353 69	606 78	348 19
222	do	H street east	6,574 69	507 37	6,066 92
223	do	8,660 04	4,743 91	3,716 53
224	do	8,536 42	5,746 22	2,890 50
225	do	7,168 06	7,466 97	302 91
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343	do

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

244	do	Pennsylvania avenue.....	24th street east.....	11th street east.....	1,511 46	2,949 96	2,438 49
245	do	I street north.....	24th street west.....	12th street east.....	839 41	1,208 77	438 96
246	do	I street north.....	B street north.....	Nat street east.....	1,619 06	1,619 06	
247	do	Delaware avenue.....	Virginia avenue.....	E street north.....	2,779 07	2,752 81	
248	do	Delaware avenue.....	I street north.....	K street north.....	2,752 81	2,752 81	
249	do	24th street west.....	G street north.....	Potomac River.....	2,752 81	2,752 81	
250	do	M street north.....	New York avenue.....	1st street east.....	5,413 76	5,413 76	
251	do	9th street west.....	D street south.....	Water street.....	1,025 25	2,118 94	1,089 69
252	do	2d street east.....	Maryland avenue.....	E street north.....	9,303 03	9,303 03	
253	do	4th street north.....	17th street west.....	Potomac River.....	10,669 71	9,197 03	
254	do	4th street east.....	North Carolina avenue.....	do.....	20,637 52	17,481 78	
255	do	G street north.....	North Capitol street.....	1st street west.....	350 09	718 49	419 51
256	do	2d street west.....	Maryland avenue.....	B street south.....	4,610 81	3,945 21	
257	do	2d street south.....	1st street west.....	15th street west.....	654 90	654 90	
258	do	Jefferson street.....	Uniontown, county.....	do.....	1,904 94	1,904 94	
259	do	Stanton street.....	Barry farm, county.....	do.....	118 23	1,276 69	
260	do	Washington street.....	Uniontown, county.....	do.....	8,177 45	6,183 09	
261	do	Fluore street.....	do.....	do.....	3,081 14	8,081 14	
262	do	14th street road.....	do.....	do.....	433 71	433 71	
263	do	Woodley laneroad, county.....	do.....	do.....	144 42	144 42	
264	do	Pomeroy street, county.....	B street north.....	B street south.....	753 05	753 05	
265	do	Trumbull street, county.....	Uniontown, county.....	do.....	11,715 63	8,102 49	
266	do	Pierce street.....	Uniontown, county.....	do.....	509 04	509 04	
267	do	Columbia road.....	do.....	6th street east.....	4,824 89	5,705 90	880 41
268	do	Jackson street.....	do.....	12th street east.....	3,332 52	3,332 52	
269	do	B street south.....	{ 2d street east.....	do.....	11,130 83	6,192 77	
270	do	Linnean Hill road, county.....	{ 11th street east.....	Potomac river.....	1,551 90	1,551 90	
271	do	26th street west.....	K street north.....	do.....	705 02	887 41	182 39
272	do	F street north.....	Virginia avenue.....	do.....	6,538 85	7,509 10	955 25
273	do	2d street west.....	P street north.....	Massachusetts avenue.....	2,090 80	2,511 90	430 50
274	do	B street north.....	1st street east.....	4th street east.....	331 44	331 44	
275	do	E street south.....	do.....	6th street east.....	12,473 42	12,473 42	
276	do	M street Pleasant street, county.....	do.....	do.....	6,086 51	6,086 51	
277	do	Nichols avenue, county.....	Boundary street.....	Grant avenue.....	5,170 85	5,170 85	
278	do	8th street extended.....	New Jersey street.....	3d street east.....	1,792 94	1,792 94	50 96
279	do	D street north.....	Maryland avenue.....	O street north.....	4,268 95	1,971 67	
280	do	2d street east.....	New York avenue.....	G street north.....	4,441 12	3,571 93	
281	do	4th street west.....	South Capital street.....	do.....	2,964 73	1,876 65	
282	do	C street south.....	3d street west.....	7th street west.....	281 90	1,876 65	355 16
283	do	I street south.....	do.....	do.....	3,054 83	3,054 83	
284	do	19th street road, county.....	do.....	do.....	501 82	501 82	
285	do	Grant avenue, county.....	3d street west.....	4th street west.....	506 90	680 95	174 95
286	do	D street south.....	6th street east.....	15th street east.....	2,497 90	1,791 89	
287	do	C street south.....	10th street east.....	11th street east.....	112 27	213 86	101 59
288	do	South Carolina avenue.....	O street north.....	R street north.....	224 96	224 96	912 65
289	do	4th street west.....	do.....	do.....		447 61	

Table showing revised assessments of streets, avenues, &c.—Continued.

No.	By whom assessed.	Street or avenue.	From—	To—	Amount of original assessment.	Net amount of revised assessment.	Decrease.	Increase.
297	Commissioners	S street north.....	16th street west.	Boundary street	\$611 64	\$1,702 77		\$1,091 13
298	do	Canal street.....	G street south.....	I street south.....	289 28	347 13	\$42 15	
299	do	2d street east.....	North Carolina avenue.	Virginia avenue	1,265 96		1,265 96	
300	do	Stanton road, county.....			837 59		837 59	
301	do	Livingston road, county.....						
302	do	Good Hope road, county.....			5,359 96		5,359 96	
303	do	Summer avenue, county.....			111 30		111 30	
304	do	Pomeroy avenue, county.....			308 95		308 95	
305	do	Boundary street.....	9th street west.	Massachusetts avenue.....	41,311 77	19,566 53	306 95	
306	do	F street north.....	New Jersey avenue.....	North Capitol street.....	1,478 47	993 77	21,715 24	
307	do	Pierce road, county.....					479 70	
308	do	Spring road, county.....						
309	do	New Cut road, county.....						
310	do	Queen's Chapel road, county.....						
311	do	Benning's Bridge road, county.....						
312	do	Sheridan street.....	18th street west.....	19th street west.....	131 25		131 25	
313	do	Sheridan avenue, county.....	Mount Pleasant, county.....		1,831 55		1,831 55	
314	do	Howard avenue.....			430 26		430 26	
315	do	Anacostia road, county.....			8,730 76		8,730 76	
316	do	Hamilton road, county.....						
317	do	Conduit road, county.....			1,667 45		1,667 45	
318	do	Brentwood road, county.....						
319	do	12th street west.....	N street north.....	O street north.....	97 14		97 14	
320	do	North Capitol street.....	B street north.....	Boundary.....	9,974 13		9,974 13	
321	do	Rock Creek Ford road, county.....						
322	do	College street, county.....						
323	do	Hickman street, county.....	High street.....		1,082 36		1,082 36	
324	do	Dunbarton street.....	Barry farm, county.....	Congress street.....	105 00		105 00	
325	do	Howard avenue.....			2,877 21		2,877 21	
326	do	River road, county.....			355 85		355 85	
327	do	6th street west.....	I street north.....	Massachusetts avenue.....				
328	do	9th street west.....	Maryland avenue.....	B street south.....	100 88	191 20		90 32
329	do	do	do	D street south.....		176 89		176 89
330	do	P Street Circle, at 19th street and Connecticut avenue.				1,477 17		1,477 17
331	do	Pennsylvania avenue and intersection of 10th street west.						
332	do							

Table showing revised assessments of streets, avenues, &c.—Continued.

No.	By whom assessed.	Street or avenue.	From—	To—	Amount of original assessment.	Net amount of revised assessment.	Decrease.	Increase.
373	Commissioners	Sumner street, Howard University Division, county.	.....	.....	\$162 20	.....	\$162 20	.....
374	do	16th street road, county .....	.....	.....	6,900 98	.....	6,900 98	.....
375	do	Canal road, county .....	.....	.....	17,693 08	.....	17,693 08	.....
376	do	Ridge road, county .....	.....	.....	349 96	.....	349 96	.....
378	do	Lot 13 square 621, on Land 1st streets.	.....	.....	191 41	\$191 41	.....	.....
379	do	G street north	23d street west	27th street west	2,445 22	2,445 22	.....	.....
	Total .....	.....	.....	.....	875,806 11	567,771 46	352,616 81	\$44,533 16

APPENDIX X 10.

TABLE I.—SPECIAL ASSESSMENT DIVISION.

APPENDIX No. 2.—Statement of amounts charged United States in the revision of assessments.

COMMISSIONERS' ASSESSMENTS.

No.	Limits.	Reservations.	Grading.	Curbing.	Sidewalk.		Carriage-way.	Parking.	Sewer.	Fence, wood.	Trees.	Total.
					Brick pavement.	Flagging.						
95	6th street east, from Pennsylvania avenue to K street south.	At South Carolina avenue and E street.	.....	\$237 10	\$217 06	.....	\$448 64	.....	.....	.....	.....	\$903 40
98	New Jersey avenue, from E street south to canal.	No. 17	\$3, 077 79	2, 881 73	3, 632 04	.....	26, 441 03	.....	\$3, 501 93	.....	\$271 00	40, 306 16
104	K street north, from Pennsylvania avenue circle to Rock Creek.	Between Pennsylvania avenue and 24th street.	.....	337 50	107 00	.....	2, 835 00	\$106 00	.....	.....	.....	3, 445 50
106	Q street north, from New Jersey avenue to 14th street west.	Between 9th street and Rhode Island avenue.	.....	371 83	313 07	.....	377 25	.....	.....	.....	.....	1, 032 20
114	N street south, from James A Canal to 3d street east.	At Canal and 1st street west.	.....	324 41	118 83	.....	1, 107 44	.....	.....	.....	.....	1, 610 63
117	S street north, from 14th street west to Boundary street.	At New Jersey avenue and No. 17 .....	.....	333 46	272 53	.....	178 98	.....	.....	.....	31 50	366 47
119	1st street east, from C street south to F street south.	Boundary street.	6, 637 91	607 21	646 43	.....	812 67	.....	.....	.....	.....	8, 704 21
123	Massachusetts avenue, from New Jersey avenue to 11th street east.	At 7th street east	1, 932 76	335 73	401 93	.....	446 39	.....	.....	.....	73 50	3, 200 29
122	do	Filling up excavation made by United States for gravel between North Capitol street and 2d street east.	9, 873 52	.....	.....	.....	.....	.....	.....	.....	.....	9, 873 53
122	do	At 8th street east	2, 913 70	525 08	517 84	.....	632 37	.....	.....	.....	59 50	4, 652 49
122	do	At 8th street east	1, 035 82	327 24	300 13	.....	574 15	.....	.....	.....	45 50	2, 942 33
122	do	At Stanton Place	1, 770 50	.....	.....	.....	.....	.....	.....	.....	.....	1, 770 50
122	do	At 2d street east	3, 433 52	134 40	171 95	.....	153 41	.....	.....	.....	17 50	3, 775 30
122	do	At 2d street east	6, 393 53	447 84	446 37	.....	596 93	.....	.....	.....	80 50	7, 357 73
122	do	At Delaware avenue, north and south side Massachusetts avenue.	512 86	531 16	540 27	.....	430 07	.....	.....	.....	63 00	2, 132 36
126	K street south, from James Creek Canal to 4th street west.	Between Delaware avenue and 2d street.	406 83	.....	.....	.....	139 99	.....	.....	.....	.....	636 83

Statement of amounts charged United States in the revision of assessments—Continued.

No.	Limits.	Reservation.	Grading.	Curbing.	Sidewalk.		Carriage-way.	Parking.	Sewer.	Fence, wood.	Trees.	Total.
					Brick pavement.	Flagging.						
127	10th street, from East Capitol street to I street north.											
130	G street north, from 22d street west to River.	At 24th street	\$1,294 13	239 13	\$220 39		\$2,463 10		\$318 62		\$24 00	\$4,568 97
130	do	Between New Hampshire and Virginia avenues, between New Hampshire avenue and 26th street.	3,133 12	498 72	449 97		4,589 30				45 00	8,716 11
130	do	Between New Hampshire avenue and 26th street.	1,149 35	204 60	183 13		2,010 54				24 00	3,570 62
132	H street north, from 22d street west to river.	Between New Hampshire avenue and 25th street.		145 32	75 53		373 91					594 76
133	Virginia avenue, from 17th street west to Rock Creek.	Between canal basin and 17th street.	3,402 20									3,402 20
133	do	At 25th street.	12,327 76									12,327 76
133	do	At 24th and G streets.	3,792 91	261 12			240 68				27 00	4,321 71
133	do	At 24th street and Virginia avenue.	4,630 34	333 49			277 28				24 00	5,265 11
133	do	At 22d street and Virginia avenue.	1,173 92	371 41			267 55				21 00	1,833 88
133	do	At 21st street and Virginia avenue.	159 50	331 22			485 40				27 00	1,003 12
133	do	At 20th street and Virginia avenue.		356 84			826 18				27 00	709 47
133	do	Square 82.		302 23			229 25		878 46		27 00	1,436 93
134	19th street east, from B street south to E street south.	Reservation 13	5,557 38									5,557 38
142	P street south, from 4th street west to Potomac River.											
144	I street south, from 6th street east to 8th street east.	Between 6th and 7th streets.										
145	South Carolina avenue, from New Jersey avenue to 8th street east.	Between 7th street east and Pennsylvania avenue.					2,738 75		1,989 12			1,989 12
145	do	Between 4th and 6th streets east.	5,796 96									2,738 75
145	do	Reservation 17	11,619 55									5,796 96
148	G street north, from 6th street east to 15th street east.											11,619 55
150	T street north, from Vermont avenue to Boundary.	Between New Hampshire avenue and 17th street.	640 52	203 18	175 98		970 31					1,989 94

154	C street south, from 4½ street west to 5th street west.	13, 511 03				809 77			14, 320 80
155	New Jersey avenue, from P street east.	2, 082 42							2, 082 42
156	do	10, 855 75	487 45	536 25	1, 474 33			52 50	22, 406 25
157	10th street west, from D street south to Water street.		157 80	188 00					805 99
158	12th street west, from P street north to Q street.								
159	Vermont avenue from P street circle to Q street north.	1, 217 17	611 18	461 55	2, 882 00				5, 171 90
160	Ohio avenue, from 12th street west to 13th street west.	4, 458 49	5, 474 47	32, 192 00	31, 537 00			448 00	77, 910 71
161	14th street west, from B street north to B street south.		4, 575 07	28, 797 90	25, 020 33			448 00	59, 219 43
162	7th street west, from B street north to B street south.		163 65	119 52	1, 263 74			16 00	1, 592 91
163	14th street west, from B street north to Ohio avenue.								
164	South Capitol street, from G street south to K street south.					891 53			891 53
165	Armory square					2, 031 12			2, 061 12
166	8th street east, from East Capitol street to I street north.								
167	5th street west, from D street north to G street north.								
168	11th street west, from B street south to Water street.	757 92	259 06	156 59	1, 418 33	107 64		15 00	2, 714 54
169	14th street east, from B street south to Boundary.	1, 643 42			187 50				1, 830 92
170	do								
171	do	271 53			31 25				302 78
172	do	370 58			31 25				401 83
173	D street south, from South Capitol street to 7th street east.				263 97				263 97
174	do								
175	do	5, 451 87			2, 496 68				7, 948 55
176	C street north, from 4th street east to 5th street east.								
177	19th street west, from New York avenue to Canal.						819 44		819 44
178	Virginia avenue, from 4½ street west to 6th street west.						215 04		215 04
179	New Hampshire avenue, from S street north to Boundary st.								
180	M street north, from 6th street east to 8th street east.						169 73		169 73
181	I street north, from 4th west to 5th street west.						383 48	68 80	402 28

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

	Limits.	Reservations.	Grading.	Curbing.	Sidewalk.		Carriage-way.	Parking.	Sewer.	Fence, wood.	Trees.	Total.
					Brick pavement.	Flagging.						
200	7th street east, from Pennsylvania avenue to M street south.	Between Pennsylvania and South Carolina avenues.					\$2,850 33					\$2,850 33
201	B street south, from 1st street west to Maryland avenue.	Between Maryland avenue and 3d street west.	\$399 02				4,801 13					5,200 15
201	do	Between 2d and 3d streets west.	\$384 49	848 51	\$803 92		5,329 74					7,466 06
202	New York avenue, from 17th street west to 23d street west.	South side, between 22d and 23d streets west.	6,326 24									6,326 24
205	E street north, from North Capitol to 1st street east.	Between Maryland avenue and F street.	1,929 71									1,929 71
207	11th street west, from Massachusetts avenue to H street north.											
209	I street north, from New Jersey avenue to North Capitol street.											
211	25th street west, from Pennsylvania avenue to M street north.	Columbia Hospital	4,104 17						\$570 67			4,674 84
212	D street south, from 7th street east to 8th street east.	Between 7th and 8th streets.					2,716 87					2,716 87
214	South Capitol street, from B street south to D street south.											
218	8th street east, from C street south to D street south.	Between C and D streets.		577 14					1,346 55			1,346 55
221	3d street west, from Maryland avenue to D street south.	Between Maryland avenue and B street south.					3,230 82		388 40			4,206 36
223	A street south, from 3d street east to 9th street east.	At 9th street	138 18	108 00	100 00		98 82					445 00
225	13th street west, from M street north to Q street north, including P street circle.	At P street circle	20,683 27	4,634 44		\$22,458 25	27,529 25					75,305 21
226	Q street north, from 6th street west to Boundary street.	Between 19th and 20th streets west.					2,820 48					2,820 48
226	do	Between 21st and Boundary streets.	1,953 32									1,953 32
228	10th street east, from Pennsylvania avenue to North Carolina avenue.											
230	10th street west, from E street north to F street north.		185 20	114 60		900 20	1,131 84				\$16 00	2,447 84
230	do	Earth hauled to canal at reservation No. 2.	1,764 00									1,764 00

232	23d street west, from Virginia	Reservation No. 4	4, 557 56				4, 557 56
233	23d street west, from Virginia	Stanton square			961 92		
234	23d street east, from Maryland avenue to Boundary st.	Between 8th and 9th streets.	3, 824 49	1, 681 51	594 62	4, 089 85	695 35
235	23d street east, from Maryland avenue to 11th street east.	Between 9th and 11th streets.	5, 993 95	1, 845 67	742 43	6, 460 59	880 02
236	23d street west, from Virginia avenue to E street north.	Reservation No. 4	6, 460 39				
237	23d street west, from G street north to Potomac River.	Between New York avenue and 1st street west.	3, 036 01				
238	23d street north, from New York avenue to 1st street east.						
239	23d street west, from Maryland avenue to E street north.						
240	23d street north, from 7th street west to Potomac River.	Rawlins square,	1, 712 00	2, 372 81	1, 365 11	6, 363 67	
241		At square 82	1, 337 62	438 00	370 55	856 27	
242		Reservation 4, National Observatory.	1, 234 33				
243	4th street east, from North Carolina avenue to Potomac River.	Between North Carolina avenue and F street south.	546 71	225 82	219 80	889 82	
244		Between Virginia avenue and I street south.	305 59	223 59	208 17	800 34	
245	2d street west, from Maryland avenue to B street south.	Between Maryland avenue and B street.		464 43	2, 919 73		
246	C street north, from 1st street west to 3d street east.	Low 1, square 683.	375 30	257 69	170 05	1, 428 55	68 88
247	12th street west, from B street north to B street south.	Reservation No. 2		5, 407 32		33, 398 00	34, 007 80
248	B street south, from 2d street east to 6th street east, and from 11th street east to 12th street east.	Between Pennsylvania avenue and 3d street east.	234 38			1, 071 88	
249	26th street west, from K street north to Potomac River.		676 59	237 63	220 35	257 98	
250	B street north, from 1st street east to 4th street east.	Corner 2d and B streets	1, 003 90	244 20	216 66	3, 301 63	186 63
251		Between 2d and 3d streets.	1, 532 04	195 70	222 22	652 03	134 16
252	E street south, from 1st street east to 6th street east.	South side, between 4th and 6th streets.	2, 118 06				
253	D street north, from New Jersey avenue to 3d street east.	At 2d street east.	916 02				
254	2d street east, from Maryland avenue to G street north.	Between Massachusetts avenue and D street.	103 53	138 03	98 88	224 55	
255	4th street west, from New Jersey avenue to P street.	Between N and O streets.	468 79	218 23	198 49	158 33	
256	17th street west, from M street north to Q street north, and from R street north to S street north.						
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Statement of amounts charged United States in the revision of assessments—Continued.

	Limits.	Reservation.	Grading.	Curbing.	Sidewalk.		Carriage-way.	Parking.	Sewer.	Fence, wood.	Trees.	Total.
					Brick pavement.	Flagging.						
294	D street south, from 4½ street west to 14th street west.	Between 4½ street and Virginia avenue.	\$531 43	\$446 09			\$1,276 01				\$38 50	\$2,342 03
294	do	Corner of 10th street.										
297	S street north, from 10th street west to Boundary street.	At New Hampshire avenue.	559 87	148 66	\$122 40		1,009 02		\$395 52		14 00	1,913 95
299	2d street east, from North Carolina avenue to Virginia ave.											
307	Connecticut avenue, from H street north to Boundary st.	At P street circle.	4,325 20	7,466 00	961 00		37,108 00	\$50 00				49,970 20
307	do	At M and N streets.	1,338 00	502 50	489 00		13,231 33					15,560 83
307	do	At Q and R streets.	4,675 20	1,606 50	1,004 00		6,304 50					13,580 20
307	do	At Farragut square.					4,012 80					4,012 80
329	9th street west, from Maryland avenue to C street south.	Between Maryland and Virginia avenues.							489 33			489 33
330	9th street west, from Maryland street to D street south.											
331	P street circle at 19th street and Connecticut avenue.	P street circle.	16 00	231 64		\$10,494 00			1,620 87			12,362 51
332	Pennsylvania avenue and intersection of 10th street west.	At 10th street west.					800 64					800 64
334	Pennsylvania avenue and intersection of 10th street east.											
360	6th street east, from M street south and Eastern Branch.	Reservation No. 14.							16,613 30			16,613 30
369	P street south, from 3d street west to 7th street west.											
110	B street south, from 4th street east to 11th street east.			329 06	290 71		832 46					1,452 23
			228,409 10	53,942 75	82,605 44	67,340 45	293,065 23	3,337 45	45,835 48	\$170 00	2,828 00	777,563 90

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APPENDIX X 17.

TABLE K.

SPECIAL ASSESSMENT DIVISION.

APPENDIX 3.—Statement of assessments for the improvement of alleys.

Number.	Location.	Original assessment.	Revised assessment.	Number.	Location.	Original assessment.	Revised assessment.
380.....	180	Included in 151.	\$243 03	449.....	102	\$104 00	.....
381.....	194	do	394 50	450.....	733	104 84	.....
382.....	209	do	1,321 20	451.....	363	295 07	.....
383.....	387	Included in 251.	416 64	452.....	347	75 00	.....
384.....	248	\$1,552 33	2,490 27	453.....	344	124 66	.....
385.....	490	433 46	412 82	454.....	319	240 00	.....
386.....	890	158 57	150 71	455.....	311	177 60	.....
387.....	245	1,461 30	1,288 63	456.....	310	248 86	.....
388.....	368	508 79	484 57	457.....	283	117 30	.....
389.....	628	1,000 98	879 33	458.....	215	74 43	.....
390.....	239	408 16	368 80	459.....	200	206 00	.....
391.....	624	28 38	171 94	460.....	189	78 27	.....
392.....	424	668 99	637 13	461.....	186	100 73	.....
393.....	78	123 05	191 51	462.....	170	31 20	.....
394.....	279	262 92	94 24	463.....	421	630 51	\$609
395.....	N. of 515	330 92	315 17	464.....	398	509 62	315
396.....	121	684 67	137 71	465.....	278	308 14	293
397.....	465	321 37	306 07	466.....	126	491 09	468
398.....	*235	465 13	442 98	467.....	234	612 22	583
399.....	337	391 03	361 85	468.....	142	640 89	72
400.....	729	785 40	748 00	469.....	274	336 49	313
401.....	367	642 14	642 94	470.....	225	186 65	129
402.....	36	325 20	.....	471.....	86	975 50	690
403.....	859	448 64	427 28	472.....	335	274 58	261
404.....	515	131 89	125 62	473.....	366	236 30	242
405.....	164	812 80	742 28	474.....	561	369 75	352
406.....	786	266 41	253 72	475.....	1,000	.....	.....
407.....	419	898 95	668 15	476.....	81	23 76	.....
408.....	365	1,168 20	914 06	477.....	725	234 30	223
409.....	462	273 30	260 29	478.....	C.	451 84	430
410.....	216	1,018 01	569 93	479.....	724	838 71	625
411.....	236	600 75	572 13	480.....	373	317 64	.....
412.....	492	530 63	505 36	481.....	14	207 30	197
413.....	484	98 20	93 52	482.....	163	890 93	848
414.....	280	681 62	649 17	483.....	727	222 05	199
415.....	207	256 30	404 08	484.....	880	843 23	326
416.....	400	413 09	393 42	485.....	37	290 52	139
417.....	326	306 56	291 97	486.....	559	609 69	580
418.....	760	720 41	393 53	487.....	417	246 31	234
419.....	436	477 00	.....	488.....	254	3,076 60	2,758
420.....	103	931 16	793 43	489.....	442	473 00	450
421.....	502	1,163 73	981 20	490.....	503	2,259 44	719
422.....	73	546 63	509 23	491.....	276	235 28	219
423.....	425	972 55	926 24	492.....	54	424 10	471
424.....	480	216 70	206 39	493.....	338	289 43	272
425.....	195	1,146 59	806 30	494.....	377	296 25	161
426.....	†416	526 31	501 25	495.....	250	506 20	481
427.....	378	462 80	399 61	496.....	417	414 45	414
428.....	575	881 63	756 95	497.....	449	1,057 60	1,007
429.....	375	398 27	511 40	498.....	510	616 03	540
430.....	397	449 51	447 50	499.....	448	727 59	692
431.....	446	412 40	697 02	500.....	302	.....	.....
432.....	841	171 85	163 67	501.....	303	.....	.....
433.....	210	756 52	720 50	502.....	Vst. 303	1,968 61	1,804
434.....	935	465 80	443 02	503.....	U st. 304	.....	.....
435.....	309	247 82	229 38	504.....	11 st. 304	.....	.....
436.....	420	292 98	279 03	505.....	.....	226 48	431
437.....	422	256 48	244 27	506.....	.....	297 11	282
438.....	900	498 61	474 87	507.....	.....	533 89	422
439.....	467	636 37	606 07	508.....	.....	527 50	307
440.....	366	803 49	741 64	509.....	1,441	1,398 02	1,352
441.....	312	928 42	802 61	510.....	625	771 54	734
442.....	D.	1,616 42	1,241 46	511.....	77	127 13	.....
443.....	277	198 74	211 07	512.....	E. of 509	416 02	396
444.....	76	171 68	116 97	513.....	116	1,285 78	1,090
445.....	408	151 39	.....	514.....	70	2,004 22	1,908
446.....	218	96 35	.....	.....	555	1,745 41	1,298
447.....	517	44 68	.....	.....	214	972 04	855
448.....	858	36 52	.....	.....	686	405 84	386

*And the V street front of lot 40.

†Seventh, Eighth, and Fifth streets front.

; Alley and S street front.

TABLE K.

APPENDIX 3.—*Statement of assessments for the improvement of alleys—Continued.*

Number.	Location.	Original assessment.	Revised assessment.	Number.	Location.	Original assessment.	Revised assessment.
515.....	435	\$346 89	\$330 38	534.....	S. of 104	\$299 26	\$285 01
516.....	Res. 12	142 44	132 33	535.....	540	864 00	699 46
517.....	237	274 33	261 27	536.....	157	231 44	
518.....	364	1,242 11	1,177 13	537.....	912	72 81	
519.....	630	151 49	144 28	538.....	90	245 00	
520.....	719	448 03	426 70	539.....	528	214 82	
521.....	454	546 35	520 33	540.....	785	96 04	
522.....	693	377 25	359 29	541.....	198	296 74	
523.....	395	340 79	352 33	542.....	183		
524.....	339	1,062 39	1,011 80	543.....	170	100 11	
525.....	111	167 16	159 20	544.....	478	61 61	
526.....	336	236 13	213 13	545.....	690	578 12	550 59
527.....	463	278 09	529 69				
528.....	140	1,175 42	811 28	Total.....		84,657 68	71,353 99
529.....	117	402 05	107 61				
530.....	159	2,981 13	2,094 00	Increase.....		17,978 93	
531.....	197	167 80	182 89	Decrease.....		4,675 24	
532.....	242	521 07	522 77				
533.....	518	229 73	218 79			13,303 69	

APPENDIX No. 18.

TABLE L.

SPECIAL ASSESSMENT DIVISION.

APPENDIX 4.—Statement of lien certificates held by First National Bank of New York et al., as affected by the revision of assessments.

Number of lien certificate.	Date of issue.	Lot.	Square.	Street.	To whom assessed.	Amount of original assessment.	Net amount of revised assessments.	Reduction.	Amount paid into court, &c.
5	Aug. 12, 1872	11	291	12th street.	Reil, Precey Ann.	\$226 25	\$187 08	\$39 17	
50	Aug. 23, 1872	of 21	218	14th street.	Young, Charles B.	52 79	37 35	15 44	
51	do	of 20	218	do	do	184 76	130 72	54 04	
65	Aug. 24, 1872	C	247	do	Purvis, Charles B.	135 75	77 64	58 11	
86	Sept. 3, 1872	A	215	Vermont avenue.	Daley, James.	784 46	352 77	431 69	
88	do	of B	215	do	do	129 45	83 51	45 94	
90	do	17	216	do	Guntton, William, receiver.	227 93	200 79	27 14	
97	do	s. 16	216	do	do	227 93	200 79	27 14	
148	Sept. 21, 1872	of 12	286	I street	Dant, James.	67 96		67 96	
149	do	of 12	286	do	Posey, Richard.	74 02	41 16	32 86	
160	do	s. 10	318	do	Wilson, John.	145 65	145 08	57	
161	do	s. 11	318	do	do	139 58	139 05	53	
172	Sept. 30, 1872	of 5	n. of 4	Pennsylvania avenue.	Stieger, W. T.	96 92	86 05	10 87	
188	do	L and K	26	do	Birch, Henry.	303 17	214 10	89 07	
189	do	of 3	27	do	Salter, Martha A.	227 62	227 01	61	
190	do	of 1	27	do	Bohrer, B. S.	526 70	468 55	58 15	
229	do	of 4	118	do	Stott, Samuel.	123 62	108 77	14 85	
230	do	of 3	118	do	do	85 99	74 99	11 21	
244	do	of 8	166	do	Wilner, George.	110 13	106 71	3 42	
256	do	s. 13	168	do	Alexander, Columbus	180 04	175 83	4 11	
257	do	s. 14	168	do	do	180 05	175 83	4 12	
258	do	of 15	168	do	do	180 04	175 83	4 11	
264	do	of 18	168	do	O'Toole, Eleanor.	181 95	177 92	4 03	
410	Oct. 5, 1872	of 28	516	4th street.	Fletcher, John.	19 40		19 40	
414	do	of 19	s. of 516	do	Hempler, John G.	74 76	72 97	1 79	
419	do	of 22	s. of 516	do	Wroe, C. P.	96 14	80 74	15 40	
421	do	of 1	s. of 516	do	Boas, James H.	62 73	61 83	1 20	
428	do	of 9	524	do	Brown, T. A.	56 63	54 58	2 05	
436	do	of 3	531	do	do	31 04	28 40	2 64	
476	do	of 3	433	7th street.	Johns, John H.	31 04	28 40	2 64	
484	Aug. 15, 1872	of 1	433	do	Clarke, Henry A.	977 80	632 50	345 30	\$240 00, September 24, 1873.

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445	do	of 8	431	do	Monroe, Nelson	170 04	43 75	127 31	\$132 20, September 24, 1873.
446	do	of 7	432	do	Monroe, Nelson	440 80	360 86	77 01	\$132 20, September 24, 1873.
447	do	of 6	433	do	Monroe, H. K., trustee	1,025 63	309 30	304 30	\$132 20, September 24, 1873.
448	do	of 12	434	do	Yates, Jackson	671 77	339 30	339 30	\$132 20, September 24, 1873.
449	do	of 39	435	do	Jackson, B. L. and W. B.	209 88	102 40	107 35	\$132 20, September 24, 1873.
450	do	of 38	436	do	Wolford, Henry	209 88	134 53	107 35	\$132 20, September 24, 1873.
451	do	of 37	437	do	Wolford, H. and M. Shilburg	209 88	134 53	107 35	\$132 20, September 24, 1873.
452	do	of 33	438	do	do	209 88	134 53	107 35	\$132 20, September 24, 1873.
453	do	of 32	439	do	Williams, Washington	218 61	140 12	78 49	\$132 20, September 24, 1873.
454	do	of 29	440	do	Sheriff, Eleanor	190 56	133 63	65 93	\$132 20, September 24, 1873.
455	do	of 25	441	do	Harvey, Catherine	209 88	102 39	107 49	\$132 20, September 24, 1873.
456	do	of 25	442	do	Carson, Ira	90 20	62 74	27 46	\$132 20, September 24, 1873.
457	do	of 25	443	do	do	89 95	44 55	25 10	\$132 20, September 24, 1873.
458	do	of 25	444	do	Kirk, Vincent	109 31	55 46	53 85	\$132 20, September 24, 1873.
459	do	of 25	445	do	Mahoney, Robert	118 04	75 66	42 38	\$132 20, September 24, 1873.
460	do	of 25	446	do	Kirk, George, trustee	364 92	238 83	126 09	\$132 20, September 24, 1873.
461	do	of 25	447	do	Kirk, George	447 11	296 43	150 68	\$132 20, September 24, 1873.
462	do	of 14	448	do	do	157 39	100 80	56 50	\$132 20, September 24, 1873.
463	do	of 13	449	do	Riley, W. B.	621 35	413 14	208 21	\$132 20, September 24, 1873.
464	do	of 14	450	do	Lomax, S. F.	461 55	310 87	150 68	\$132 20, September 24, 1873.
465	do	of 13	451	do	Reed, Joseph W.	215 07	142 87	72 20	\$132 20, September 24, 1873.
466	do	of 12	452	do	Whitney, H. O. and A. Loyd, trustee	215 06	128 92	86 14	\$132 20, September 24, 1873.
467	do	of 11	453	do	Van Riewick, John	175 71	96 64	79 07	\$132 20, September 24, 1873.
468	do	of 1	454	do	Phillips, Robert A.	621 85	321 82	300 63	\$132 20, September 24, 1873.
469	do	of 14	455	do	do	621 85	413 39	208 21	\$132 20, September 24, 1873.
470	do	of 13	456	do	Jenkins, W. B., trustee	283 01	187 60	97 32	\$132 20, September 24, 1873.
471	do	of 13	457	do	do	182 50	92 51	70 08	\$132 20, September 24, 1873.
472	do	of 12	458	do	Dent, H.	229 00	134 09	94 91	\$132 20, September 24, 1873.
473	do	of 12	459	do	do	215 05	120 14	94 91	\$132 20, September 24, 1873.
474	do	of 11	460	do	do	447 61	249 24	188 37	\$132 20, September 24, 1873.
475	do	of 11	461	do	do	156 77	89 92	66 85	\$132 20, September 24, 1873.
476	do	of 11	462	do	Cullane, Pat	479 03	267 14	211 89	\$132 20, September 24, 1873.
477	do	of 13	463	do	do	697 63	420 00	277 63	\$132 20, September 24, 1873.
478	do	of 13	464	do	do	348 51	212 77	135 74	\$132 20, September 24, 1873.
479	do	of 12	465	do	do	334 56	198 82	135 74	\$132 20, September 24, 1873.
480	do	of 11	466	do	do	348 51	212 77	135 74	\$132 20, September 24, 1873.
481	do	of 10	467	do	Close, Ann E. S.	451 14	238 87	212 27	\$132 20, September 24, 1873.
482	do	of 19	468	do	Shekel, B. O., trustee for McGuire	218 59	120 83	97 76	\$132 20, September 24, 1873.
483	do	of 11	469	do	Milburn, M., trustee	904 26	579 66	324 60	\$132 20, September 24, 1873.
484	do	of 11	470	do	do	143 90	92 25	51 65	\$132 20, September 24, 1873.
485	do	of 11	471	do	Petty, James T.	468 15	300 11	168 04	\$132 20, September 24, 1873.
486	do	of 11	472	do	Bayne, Ann E.	223 82	104 83	117 59	\$132 20, September 24, 1873.
487	do	of 11	473	do	Smith, J. L. & L. A. Cook	223 89	121 77	102 12	\$132 20, September 24, 1873.
488	do	of 11	474	do	do	223 88	121 77	102 11	\$132 20, September 24, 1873.
489	do	of 11	475	do	do	202 56	129 85	72 71	\$132 20, September 24, 1873.
490	do	of 11	476	do	Marr, Thomas F.	202 56	128 72	78 23	\$132 20, September 24, 1873.
491	do	of 11	477	do	Brown, W. E.	206 94	128 72	78 23	\$132 20, September 24, 1873.
492	do	of 11	478	do	Martin, Mary E.	223 88	110 62	113 26	\$132 20, September 24, 1873.
493	do	of 11	479	do	Mankin, John R. W.	225 18	144 33	80 85	\$132 20, September 24, 1873.
494	do	of 10	480	do	Dani, George W.	174 89	116 30	58 59	\$132 20, September 24, 1873.
495	do	of 11	481	do	Ganton, William	437 66	251 63	186 03	\$132 20, September 24, 1873.

Statement of lien certificates held by First National Bank of New York et al., as affected by the revision of assessments—Continued.

Number of lien certificate.	Date of issue.	Lot.	Square.	Street.	To whom assessed.	Amount of original assessment.	Net amount of revised assessment.	Reduction.	Amount paid into court, &c.
591	Aug. 19, 1872	12	466	7th street.	Croggan, William H.	\$399 27	\$255 97	\$143 30	\$87 84, September 24, 1873.
592	do	of 13	466	do	Croggan, John T. S.	200 08	128 22	71 86	\$44 01, September 24, 1873.
593	do	of 13	466	do	do	141 50	90 94	50 56	\$31 13, September 24, 1873.
600	do	7	467	do	Fahey, Thomas	192 38	123 32	69 06	\$42 82, September 24, 1873.
601	do	8	467	do	Hutton, Jacob D.	201 11	128 92	72 19	\$44 24, October 3, 1873.
602	do	9	467	do	Church, Charles B.	213 76	143 91	69 85	\$47 01, October 3, 1873.
603	do	10	467	do	do	912 81	598 90	313 91	\$200 81, October 3, 1873.
608	do	11	468	do	Sheckell, George A.	218 61	140 13	78 48	\$48 09, September 24, 1873.
609	do	12	468	do	Fahey, Thomas	218 61	140 13	78 48	\$48 10, September 24, 1873.
610	do	13	468	do	Godney, Samuel	237 80	118 99	118 81	
611	do	of 14	468	do	do	43 72	28 02	15 70	
616	do	17	468	do	Campbell, Robert G.	218 61	140 13	78 48	\$43 72, September 30, 1873.
620	do	10	469	do	Brewer, Charles J.	237 80	139 32	78 48	
621	do	11	469	do	Shea, Bartholomew	237 80	139 32	78 48	\$63 16, September 29, 1873.
622	do	of 12	469	do	do	169 58	102 29	57 29	
623	do	of 12	469	do	Garwood, S. H.	78 22	50 55	27 67	
624	do	13	469	do	do	237 80	134 34	103 46	
625	do	of 14	469	do	do	41 38	21 91	19 47	
630	do	of 16	469	do	Bishop, Joseph	43 38	27 79	15 59	\$9 54, September 24, 1873.
631	do	of 17	469	do	do	125 35	80 35	45 00	\$27 51, September 24, 1873.
632	do	of 17	469	do	Springman, John F.	112 47	78 98	33 49	\$24 74, September 25, 1873.
633	do	of 18	469	do	do	237 80	139 32	78 48	\$52 31, September 25, 1873.
634	do	8	470	do	Mattings, George	237 80	129 34	108 46	
635	do	9	470	do	do	281 52	151 29	129 23	
636	do	10	470	do	do	262 58	135 10	124 23	
637	do	11	470	do	do	251 52	137 50	124 22	
642	do	all	w. of 471	do	Robtwell, Andrew	185 30	1,289 50	905 80	\$42 89, September 24, 1873.
643	do	16	471	do	Van Ruiswick, John	194 07	111 20	82 87	\$38 47, September 24, 1873.
646	do	17	471	do	do	174 88	92 00	82 88	\$38 47, September 24, 1873.
647	do	18	471	do	do	174 88	92 00	82 88	\$37 86, September 24, 1873.
648	do	19	471	do	do	172 22	89 53	72 70	
649	do	20	471	do	Mattings, George	153 03	80 52	72 51	
650	do	21	471	do	do	174 88	92 00	82 88	
651	do	22	471	do	do	194 07	111 20	82 87	
652	do	23	471	do	do	174 88	92 00	82 88	
653	do	all	471	do	do	174 88	92 00	82 88	
655	do	all	472	do	Potomac Ferry Company, and G. and T. Parker.	3,024 33	1,571 17	1,453 16	
660	Sept. 2, 1872	1	223	New York avenue	Dodge, H. H., et al., trustees	312 33	168 90	143 43	

691	do	.....	322	do	Chapman, Elizabeth	312 33	169 90	143 43
674	do	.....	253	do	Nicholls, H. S., and W. W. Carcorn	1,772 34	896 00	905 00
691	do	.....	253	do	Wilson, John	290 47	223 11	70 39
693	do	.....	252	do	do	1,030 10	979 55	350 55
703	do	.....	286	do	Alexander, Columbus	170 36	106 57	64 79
708	do	.....	287	do	Mauzy, Isabella	20 50	13 54	6 96
722	do	.....	372	do	do	298 32	137 61	70 71
723	do	.....	372	do	Graham, Carter B	290 61	164 95	125 66
3943	do	.....	372	do	do	298 74	164 83	124 91
748	do	.....	373	do	Morrison, David L	63 09	63 00	63 00
760	do	.....	373	do	Kennedy, J. C., trustee for S. A. Bradley	257 02	135 05	121 97
802	do	.....	250	H street	Helskell, H. L.	182 13	156 94	25 19
803	do	.....	407	D street	Christian Association	256 43	252 02	4 41
838	do	.....	407	3d street	do	256 44	252 02	4 42
839	do	.....	529	do	Speaks, Winnie A	205 76	172 32	33 44
846	do	.....	530	do	Bowen, George	822 03	665 58	156 45
849	do	.....	531	do	Burr, R. W.	214 00	177 70	36 30
850	do	.....	531	do	Baldwin, W. H	617 28	409 84	207 44
851	do	.....	532	do	Hannay, Peter	617 28	403 91	213 37
870	do	.....	562	do	Riley, P. C.	214 68	159 04	56 04
881	do	.....	562	do	Pepper, H. P.	1,234 56	102 76	131 80
883	do	.....	564	do	Dellinger, H. M., trustee	823 04	583 07	239 97
886	do	.....	564	do	Stevens, M. H.	205 76	165 67	40 09
887	do	.....	564	do	do	205 76	182 17	23 59
888	do	.....	564	do	Koonce, Frederick	205 76	165 67	40 09
893	do	.....	566	do	Bottomly, James	494 51	343 47	151 04
894	do	.....	566	do	Sullivan, John T.	187 53	181 93	15 60
899	do	.....	568	do	Marshall, Sophia	164 60	116 00	48 60
910	do	.....	525	do	do	164 61	161 39	3 22
921	do	.....	527	do	Jones, J. Stanley	227 02	204 83	22 19
922	do	.....	527	do	do	178 32	161 36	16 96
931	do	.....	381	Louisiana avenue	Berry, Thomas	922 30	566 06	356 24
932	do	.....	381	do	Hailip, C. G.	230 37	180 23	50 14
938	do	.....	382	do	Phillip, W. H.	566 12	523 37	42 75
960	do	.....	382	do	Wall, William L.	566 12	461 36	104 76
962	do	.....	382	do	Phillip, W. H.	562 00	520 73	41 27
963	do	.....	382	do	Semmes, John H.	1,213 11	1,038 67	174 44
967	do	.....	382	12th street	O'Brien, James et al (trustee)	141 03	134 70	6 33
969	do	.....	263	do	Fry, Henry	141 38	135 01	6 37
973	do	.....	263	do	Connor, Lewis W.	407 83	385 14	22 69
974	do	.....	266	do	do	111 67	105 08	6 59
975	do	.....	266	do	Provost, Sarah M.	321 04	304 82	16 26
976	do	.....	290	do	Coltman, Sophia	180 54	152 41	8 13
982	do	.....	297	do	Blagden, Thomas, trustee	155 01	147 06	7 85
990	do	.....	297	do	do	599 64	443 04	116 60
991	do	.....	299	do	Miller, George R.	296 42	281 62	14 80
1004	do	.....	300	do	Cooldige, E.	1,752 95	1,369 08	383 87
1006	do	.....	325	do	Smith, J. L.	571 52	542 60	28 92
1010	do	.....	326	do	Blitz, F. S.	137 04	130 29	6 75
	do	.....	326	do	do	646 09	555 81	90 28

No interest collected, by order of Commissioners, December 12, 1879.
Do

1173	do	of 3	Scott, Elizabeth et al	305 97
1174	do	of 4	Nailor, Allison	183 90
1175	do	of 5	Scott, Elizabeth et al	104 79
1176	do	of 6	Fay, John C	233 19
1177	do	of 7	McGleu, G. T	204 87
1178	do	of 8	Scott, E. et al	174 74
1179	do	of 9	Turton, J. H	187 85
1180	do	of 10	do	121 39
1181	do	of 11	do	108 62
1182	do	of 12	do	112 39
1183	do	of 13	do	154 00
1184	do	of 14	do	230 64
1185	do	of 15	do	184 58
1186	do	of 16	do	234 97
1187	do	of 17	do	363 68
1188	do	of 18	do	278 23
1189	do	of 19	do	334 42
1190	do	of 20	do	185 12
1191	do	of 21	do	386 03
1192	do	of 22	do	142 79
1193	do	of 23	do	92 88
1194	do	of 24	do	92 88
1195	do	of 25	do	98 63
1196	do	of 26	do	112 28
1197	do	of 27	do	189 34
1198	do	of 28	do	289 19
1199	do	of 29	do	87 51
1200	do	of 30	do	447 71
1201	do	of 31	do	482 04
1202	do	of 32	do	367 93
1203	do	of 33	do	203 92
1204	do	of 34	do	304 75
1205	do	of 35	do	332 44
1206	do	of 36	do	282 27
1207	do	of 37	do	115 89
1208	do	of 38	do	33 86
1209	do	of 39	do	142 92
1210	do	of 40	do	139 96
1211	do	of 41	do	69 48
1212	do	of 42	do	447 71
1213	do	of 43	do	117 58
1214	do	of 44	do	135 12
1215	do	of 45	do	222 70
1216	do	of 46	do	150 21
1217	do	of 47	do	105 21
1218	do	of 48	do	113 68
1219	do	of 49	do	113 69
1220	do	of 50	do	312 64
1221	do	of 51	do	323 93
1222	do	of 52	do	338 65
1223	do	of 53	do	421 58
1224	do	of 54	do	648 61
1225	do	of 55	do	330 02
1226	do	of 56	do	72
1227	do	of 57	do	1 67
1228	do	of 58	do	1 79
1229	do	of 59	do	188 99
1230	do	of 60	do	200 78
1231	do	of 61	do	200 78
1232	do	of 62	do	200 78
1233	do	of 63	do	200 78
1234	do	of 64	do	200 78
1235	do	of 65	do	200 78
1236	do	of 66	do	200 78
1237	do	of 67	do	200 78
1238	do	of 68	do	200 78
1239	do	of 69	do	200 78
1240	do	of 70	do	200 78
1241	do	of 71	do	200 78
1242	do	of 72	do	200 78
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1249	do	of 79	do	200 78
1250	do	of 80	do	200 78
1251	do	of 81	do	200 78
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1253	do	of 83	do	200 78
1254	do	of 84	do	200 78
1255	do	of 85	do	200 78
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1257	do	of 87	do	200 78
1258	do	of 88	do	200 78
1259	do	of 89	do	200 78
1260	do	of 90	do	200 78
1261	do	of 91	do	200 78
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1263	do	of 93	do	200 78
1264	do	of 94	do	200 78
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1266	do	of 96	do	200 78
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1269	do	of 99	do	200 78
1270	do	of 100	do	200 78
1271	do	of 101	do	200 78
1272	do	of 102	do	200 78
1273	do	of 103	do	200 78
1274	do	of 104	do	200 78
1275	do	of 105	do	200 78
1276	do	of 106	do	200 78
1277	do	of 107	do	200 78
1278	do	of 108	do	200 78
1279	do	of 109	do	200 78
1280	do	of 110	do	200 78
1281	do	of 111	do	200 78
1282	do	of 112	do	200 78
1283	do	of 113	do	200 78
1284	do	of 114	do	200 78
1285	do	of 115	do	200 78
1286	do	of 116	do	200 78
1287	do	of 117	do	200 78
1288	do	of 118	do	200 78
1289	do	of 119	do	200 78
1290	do	of 120	do	200 78
1291	do	of 121	do	200 78
1292	do	of 122	do	200 78
1293	do	of 123	do	200 78
1294	do	of 124	do	200 78
1295	do	of 125	do	200 78
1296	do	of 126	do	200 78
1297	do	of 127	do	200 78
1298	do	of 128	do	200 78
1299	do	of 129	do	200 78
1300	do	of 130	do	200 78
1301	do	of 131	do	200 78
1302	do	of 132	do	200 78
1303	do	of 133	do	200 78
1304	do	of 134	do	200 78
1305	do	of 135	do	200 78
1306	do	of 136	do	200 78
1307	do	of 137	do	200 78
1308	do	of 138	do	200 78
1309	do	of 139	do	200 78
1310	do	of 140	do	200 78
1311	do	of 141	do	200 78
1312	do	of 142	do	200 78
1313	do	of 143	do	200 78
1314	do	of 144	do	200 78
1315	do	of 145	do	200 78
1316	do	of 146	do	200 78
1317	do	of 147	do	200 78
1318	do	of 148	do	200 78
1319	do	of 149	do	200 78
1320	do	of 150	do	200 78
1321	do	of 151	do	200 78
1322	do	of 152	do	200 78
1323	do	of 153	do	200 78
1324	do	of 154	do	200 78
1325	do	of 155	do	200 78
1326	do	of 156	do	200 78
1327	do	of 157	do	200 78
1328	do	of 158	do	200 78
1329	do	of 159	do	200 78
1330	do	of 160	do	200 78
1331	do	of 161	do	200 78
1332	do	of 162	do	200 78
1333	do	of 163	do	200 78
1334	do	of 164	do	200 78
1335	do	of 165	do	200 78
1336	do	of 166	do	200 78
1337	do	of 167	do	200 78
1338	do	of 168	do	200 78
1339	do	of 169	do	200 78
1340	do	of 170	do	200 78
1341	do	of 171	do	200 78
1342	do	of 172	do	200 78
1343	do	of 173	do	200 78
1344	do	of 174	do	200 78
1345	do	of 175	do	200 78
1346	do	of 176	do	200 78
1347	do	of 177	do	200 78
1348	do	of 178	do	200 78
1349	do	of 179	do	200 78
1350	do	of 180	do	200 78
1351	do	of 181	do	200 78
1352	do	of 182	do	200 78
1353	do	of 183	do	200 78
1354	do	of 184	do	200 78
1355	do	of 185	do	200 78
1356	do	of 186	do	200 78
1357	do	of 187	do	200 78
1358	do	of 188	do	200 78
1359	do	of 189	do	200 78
1360	do	of 190	do	200 78
1361	do	of 191	do	200 78
1362	do	of 192	do	200 78
1363	do	of 193	do	200 78
1364	do	of 194	do	200 78
1365	do	of 195	do	200 78
1366	do	of 196	do	200 78
1367	do	of 197	do	200 78
1368	do	of 198	do	200 78
1369	do	of 199	do	200 78
1370	do	of 200	do	200 78
1371	do	of 201	do	200 78
1372	do	of 202	do	200 78
1373	do	of 203	do	200 78
1374	do	of 204	do	200 78
1375	do	of 205	do	200 78
1376	do	of 206	do	200 78
1377	do	of 207	do	200 78
1378	do	of 208	do	200 78
1379	do	of 209	do	200 78
1380	do	of 210	do	200 78
1381	do	of 211	do	200 78
1382	do	of 212	do	200 78
1383	do	of 213	do	200 78
1384	do	of 214	do	200 78
1385	do	of 215	do	200 78
1386	do	of 216	do	200 78
1387	do	of 217	do	200 78
1388	do	of 218	do	200 78
1389	do	of 219	do	200 78
1390	do	of 220	do	200 78
1391	do	of 221	do	200 78
1392	do	of 222	do	200 78
1393	do	of 223	do	200 78
1394	do	of 224	do	200 78
1395	do	of 225	do	200 78
1396	do	of 226	do	200 78
1397	do	of 227	do	200 78
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1399	do	of 229	do	200 78
1400	do	of 230	do	200 78
1401	do	of 231	do	200 78
1402	do	of 232	do	200 78
1403	do	of 233	do	200 78
1404	do	of 234	do	200 78
1405	do	of 235	do	200 78
1406	do	of 236	do	200 78
1407	do	of 237	do	200 78
1408	do	of 238	do	200 78
1409	do	of 239	do	200 78
1410	do	of 240	do	200 78
1411	do	of 241	do	200 78
1412	do	of 242	do	200 78
1413	do	of 243	do	200 78
1414	do	of 244	do	200 78
1415	do	of 245	do	200 78
1416	do	of 246	do	200 78
1417	do	of 247	do	200 78
1418	do	of 248	do	200 78
1419	do	of 249	do	200 78
1420	do	of 250	do	200 78
1421	do	of 251	do	200 78
1422	do	of 252	do	200 78
1423	do	of 253	do	200 78
1424	do	of 254	do	200 78
1425	do	of 255	do	200 78
1426	do	of 256	do	200 78
1427	do	of 257	do	200 78
1428	do	of 258	do	200 78
1429	do	of 259	do	200 78

Statement of lien certificates held by First National Bank of New York et al., as affected by the revision of assessments—Continued.

Number of lien certificate.	Date of issue.	Lot.	Square.	Street.	To whom assessed.	Amount of original assessment.	Net amount of revised assessment.	Reduction.	Amount paid into court, &c.
1302	Nov. 12, 1872	1	199	15th street	Lander, Henry, trustee	\$519 30	\$488 81	\$30 49	
1303	do	of s. 21	199	do	do	179 23	179 23	11 17	
1313	do	s. 16	220	15th street west	West, Joseph R.	170 79	142 08	28 71	
1316	do	1	221	do	Corcoran, W. W., and George W. Riggs	422 35	351 36	70 99	
1317	do	24	221	do	do	346 20	288 00	58 20	
1318	do	23	221	do	do	346 19	288 00	58 19	
1319	do	22	221	do	do	346 20	288 00	58 20	
1321	do	of 20	221	do	Hooper, Samuel	171 94	115 76	56 18	
1322	do	of 19	221	do	do	346 19	233 05	113 14	
1323	do	of 18	221	do	do	422 35	276 03	146 32	
1333	Nov. 15, 1872	of s. 51	183	16th street	Long, James W.	88 40	68 98	19 42	
1365	do	of s. 20	184	do	Myers, John	162 84	151 65	11 19	
1372	do	s. 1	186	do	Corcoran, W. W.	1, 219 73	756 43	463 30	
1373	do	s. 7	186	do	do	451 15	451 15	200 21	
1374	do	s. 8	186	do	do	904 15	612 49	291 66	
1377	do	of 10	196	do	do	134 98	233 41	103 57	
1378	do	of 11	196	do	do	1, 116 61	771 53	345 08	
1379	do	of 8	200	do	Charlisle, J. M., et al., trustees	260 83	203 62	57 31	
1381	do	do	200	do	Chureman, C. W.	697 88	396 34	301 54	
1384	do	s. 35	197	do	Wilson, F. F.	158 19	109 44	48 75	
1388	do	s. 4	197	do	Jennings, William	222 62	181 53	51 09	
1421	Nov. 18, 1872	16	175	do	Hampton, Roderick	835 70	728 11	109 59	
1422	do	15	175	do	Gilbert, B. F.	501 41	435 66	65 75	
1423	do	14	175	do	do	501 42	435 66	65 76	
1424	do	1	177	do	do	835 70	728 11	109 59	
1427	do	15	177	do	Adams, J. G.	835 70	728 11	109 59	
1428	do	16	177	do	do	522 31	453 82	68 49	
1431	do	s. 3	177	do	Hutchins, Benedict	522 31	453 82	68 49	
1433	do	1	177	do	Nairn, John W.	167 14	128 85	38 29	
1434	do	3	N. of 177	do	do	411 23	311 83	99 40	
1436	do	16	178	do	Riggs, George W.	1, 503 60	868 21	635 39	
1437	do	17	178	do	do	835 70	728 10	109 60	
1438	do	18	178	do	do	835 70	728 10	109 60	
1439	do	19	178	do	do	459 63	399 36	60 27	
1440	do	20	178	do	do	459 63	399 36	60 27	
1452	do	s. 53	178	do	Greene, R. P.	122 14	123 86	11 72	
1453	Nov. 18, 1872	s. 43	190	do	Garaplan, Robert A.	188 03	149 43	38 60	

1744	Dec. 9, 1872	a. 16	do	Paul, Isaac I.	171 32	144 45	22 47
1468	Nov. 18, 1872	a. 6	do	Pierce, Joshua	830 70	302 07	302 08
1469	do	7	do	do	400 77	302 43	117 34
1470	do	8	do	do	472 17	303 75	181 42
1471	do	9	do	do	472 17	303 75	108 42
1472	do	10	do	do	509 77	302 43	117 34
1473	do	11	do	do	833 70	302 08	202 08
1474	do	a. 14	do	Mitchell, S. S., and Henry Beard	200 58	174 27	26 31
1475	do	a. 15	do	do	183 85	159 74	24 11
1476	do	a. 16	do	do	183 85	159 74	24 11
1477	do	a. 17	do	do	183 85	159 74	24 11
1478	do	a. 18	do	do	183 85	159 74	24 11
1479	do	a. 19	do	do	183 85	159 74	24 11
1480	do	a. 20	do	do	183 85	159 74	24 11
1481	do	a. 21	do	do	183 85	159 74	24 11
1482	do	a. 22	do	do	183 85	159 74	24 11
1483	do	a. 23	do	do	183 85	159 74	24 11
1484	do	a. 24	do	do	183 85	159 74	24 11
1485	do	a. 25	do	do	183 85	159 74	24 11
1486	do	a. 26	do	do	183 85	159 74	24 11
1487	do	a. 27	do	do	183 85	159 74	24 11
1488	do	a. 28	do	do	183 85	159 74	24 11
1489	do	a. 29	do	do	183 85	159 74	24 11
1490	do	a. 30	do	do	183 85	159 74	24 11
1491	do	a. 31	do	do	183 85	159 74	24 11
1492	do	a. 32	do	do	183 85	159 74	24 11
1493	do	a. 33	do	do	183 85	159 74	24 11
1494	do	a. 34	do	do	183 85	159 74	24 11
1495	do	a. 35	do	do	183 85	159 74	24 11
1496	do	a. 36	do	do	183 85	159 74	24 11
1497	do	a. 37	do	do	183 85	159 74	24 11
1498	do	a. 38	do	do	183 85	159 74	24 11
1499	do	a. 39	do	do	183 85	159 74	24 11
1500	do	a. 40	do	do	183 85	159 74	24 11
1501	do	a. 41	do	do	183 85	159 74	24 11
1502	do	a. 42	do	do	183 85	159 74	24 11
1503	do	a. 43	do	do	183 85	159 74	24 11
1504	do	a. 44	do	do	183 85	159 74	24 11
1505	do	a. 45	do	do	183 85	159 74	24 11
1506	do	a. 46	do	do	183 85	159 74	24 11
1507	do	a. 47	do	do	183 85	159 74	24 11
1508	do	a. 48	do	do	183 85	159 74	24 11
1509	do	a. 49	do	do	183 85	159 74	24 11
1510	do	a. 50	do	do	183 85	159 74	24 11
1511	do	a. 51	do	do	183 85	159 74	24 11
1512	do	a. 52	do	do	183 85	159 74	24 11
1513	do	a. 53	do	do	183 85	159 74	24 11
1514	do	a. 54	do	do	183 85	159 74	24 11
1515	do	a. 55	do	do	183 85	159 74	24 11
1516	do	a. 56	do	do	183 85	159 74	24 11
1517	do	a. 57	do	do	183 85	159 74	24 11
1518	do	a. 58	do	do	183 85	159 74	24 11
1519	do	a. 59	do	do	183 85	159 74	24 11
1520	do	a. 60	do	do	183 85	159 74	24 11
1521	do	a. 61	do	do	183 85	159 74	24 11
1522	do	a. 62	do	do	183 85	159 74	24 11
1523	do	a. 63	do	do	183 85	159 74	24 11
1524	do	a. 64	do	do	183 85	159 74	24 11
1525	do	a. 65	do	do	183 85	159 74	24 11
1526	do	a. 66	do	do	183 85	159 74	24 11
1527	do	a. 67	do	do	183 85	159 74	24 11
1528	do	a. 68	do	do	183 85	159 74	24 11
1529	do	a. 69	do	do	183 85	159 74	24 11
1530	do	a. 70	do	do	183 85	159 74	24 11
1531	do	a. 71	do	do	183 85	159 74	24 11
1532	do	a. 72	do	do	183 85	159 74	24 11
1533	do	a. 73	do	do	183 85	159 74	24 11
1534	do	a. 74	do	do	183 85	159 74	24 11
1535	do	a. 75	do	do	183 85	159 74	24 11
1536	do	a. 76	do	do	183 85	159 74	24 11
1537	do	a. 77	do	do	183 85	159 74	24 11
1538	do	a. 78	do	do	183 85	159 74	24 11
1539	do	a. 79	do	do	183 85	159 74	24 11
1540	do	a. 80	do	do	183 85	159 74	24 11
1541	do	a. 81	do	do	183 85	159 74	24 11
1542	do	a. 82	do	do	183 85	159 74	24 11
1543	do	a. 83	do	do	183 85	159 74	24 11
1544	do	a. 84	do	do	183 85	159 74	24 11
1545	do	a. 85	do	do	183 85	159 74	24 11
1546	do	a. 86	do	do	183 85	159 74	24 11
1547	do	a. 87	do	do	183 85	159 74	24 11
1548	do	a. 88	do	do	183 85	159 74	24 11
1549	do	a. 89	do	do	183 85	159 74	24 11
1550	do	a. 90	do	do	183 85	159 74	24 11
1551	do	a. 91	do	do	183 85	159 74	24 11
1552	do	a. 92	do	do	183 85	159 74	24 11
1553	do	a. 93	do	do	183 85	159 74	24 11
1554	do	a. 94	do	do	183 85	159 74	24 11
1555	do	a. 95	do	do	183 85	159 74	24 11
1556	do	a. 96	do	do	183 85	159 74	24 11
1557	do	a. 97	do	do	183 85	159 74	24 11
1558	do	a. 98	do	do	183 85	159 74	24 11
1559	do	a. 99	do	do	183 85	159 74	24 11
1560	do	a. 100	do	do	183 85	159 74	24 11
1561	do	a. 101	do	do	183 85	159 74	24 11
1562	do	a. 102	do	do	183 85	159 74	24 11
1563	do	a. 103	do	do	183 85	159 74	24 11
1564	do	a. 104	do	do	183 85	159 74	24 11
1565	do	a. 105	do	do	183 85	159 74	24 11
1566	do	a. 106	do	do	183 85	159 74	24 11

Statement of lien certificates held by First National Bank of New York et al., as affected by the revision of assessments—Continued.

Number of lien certificate.	Date of issue.	Lot.	Square.	Street.	To whom assessed.	Amount of original assessment.	Net amount of revised assess-ment.	Reduction.	Amount paid into court, &c.
1570	Nov. 21, 1872	of 2	759	East Capitol street.	Payne, Calvin, trustee	\$255 88	\$131 50	\$124 38	
1575	do	of 3	759	do	Oyster, George M.	184 98	95 53	89 45	
1576	do	of 4	759	do	do	322 16	166 10	156 06	
1577	do	of 4	759	do	Marceon, Rose	184 98	95 53	89 45	
1578	do	of 4	759	do	Byington, A. H.	509 08	251 15	257 93	
1579	do	of 6	786	do	Ferry, James	204 63	130 54	74 09	
1580	do	of 2	816	do	McCallum, John	124 66	79 53	45 13	
1589	do	of 2	816	do	Collins, Robert	184 98	118 02	66 96	
1594	do	of 4	840	do	York, Lucy	221 96	141 62	80 34	
3598	do	of 2	840	do	Prior, Charles	147 96	94 41	53 55	
1608	do	of 17	897	do	do	74 00	47 20	26 80	
1609	do	of 18	897	do	do	166 48	106 21	60 27	
1613	do	of 7	817	do	Birch, J. S.	23 12	14 74	8 38	
1615	do	of 7	817	do	Fredericks, Emil S.	319 85	204 05	115 80	
1616	do	of 8	841	do	Fitch, Thomas	194 23	102 96	91 27	
1621	do	of 12	869	do	Lathrop, Chansey	471 70	259 41	212 29	
1629	do	of 15	869	do	do	471 70	259 41	212 29	
1630	do	of 16	869	do	do	415 04	264 78	150 26	
1633	do	of 19	869	do	Prout, Robert	471 70	300 92	170 78	
1634	do	of 20	869	do	do	471 70	300 92	170 78	
1635	do	of 21	869	do	do	683 66	356 07	327 59	
1637	do	of 23	869	do	Mason, Emanuel	91 73	58 52	33 21	
1639	do	of 10	898	do	Junkin, Charles H. W.	460 90	253 91	206 99	
1640	do	of 11	898	do	Fusa, W. H.	535 28	471 50	263 78	
1649	do	of 6	942	do	Kelley, Michael	288 22	231 22	57 00	
1650	do	of 7	942	do	Dunn, Patrick	535 28	341 48	193 80	
1655	do	of 9	942	do	Sparks, F. R.	663 62	423 35	240 27	
1656	do	of 1	967	do	Spanning, Sophia H.	277 46	177 01	100 45	
1657	do	of 1	967	do	Gollina, John	277 46	177 01	100 45	
1659	do	of 3	967	do	Gollina, Sarah B.	462 44	295 02	167 42	
1660	do	of 3	967	do	Gollina, Robert	462 45	295 02	167 43	
1662	do	of 1	919	do	Gollina, William E.	83 24	53 11	30 13	
1663	do	of 1	919	do	do	112 53	71 78	40 75	
1667	do	of 2	941	do	Mandaley, William	183 82	117 27	66 55	
1670	do	of 1	941	do	Campbell, Albert	212 72	139 96	72 76	
1671	do	of 1	966	do	Baldwin, William T.	1,218 54	777 38	441 16	
1672	do	of 2	966	do	do	924 89	590 03	334 86	
1674	do	of 1	471	Water street.	Rothwell, Andrew	554 15	244 35	309 77	

To correct error between amount of lien and old assessment.

[illegible]

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Statement of lien certificates held by First National Bank of New York, et al., as affected by the revision of assessments—Continued.

Number of lien certificate.	Date of issue.	Lot.	Square.	Street.	To whom assessed.	Amount of original assessment.	Net amount of revised assess-ment.	Reduction.	Amount paid into court, &c.
1940	Dec. 14, 1873	of 14	493	44 street.	Clements, Rachel and M. E.	\$149 73	\$122 16	\$27 57	
1941	do	15	493	do	Herman, Samuel	381 44	361 91	19 53	
1942	do	14	493	do	Openheimer, M.	149 74	132 02	17 72	
1943	do	of 1	494	do	Jackson, Pompey	230 82	207 59	23 23	
1944	do	of 1	494	do	Cullane, Patrick	230 58	201 42	29 16	
1945	do	of 15	494	do	Kurch, J. H.	124 70	100 66	24 04	
1947	do	of F	494	do	Gross, Caroline	118 93	88 71	30 22	
1948	do	of H	494	do	Brewer, Charles J.	118 93	92 82	26 11	
1950	do	of 15	494	do	Jackson, Pompey	9	8 05	1 33	
1951	do	of 1	495	do	Bacon, Josephine C.	103 80	80 98	22 82	
1952	do	of 1	495	do	Mattingly, George	52 87	45 23	7 45	
1953	do	33	495	do	Cullane, M.	176 85	150 61	26 24	
1956	do	36	495	do	Mattingly, George	181 04	158 88	22 10	
1957	do	37	495	do	Walker, George F.	156 40	123 88	32 61	
1958	do	of 38	495	do	do	25 03	19 92	5 11	
1959	do	of 38	495	do	Mattingly, George	131 43	112 83	18 60	
1960	do	of 39	495	do	do	181 04	158 88	22 16	
1961	do	40	495	do	do	205 59	183 44	22 15	
1962	do	41	495	do	do	156 40	134 34	22 06	
1963	do	42	495	do	do	136 12	107 76	28 36	
1964	do	of 1	496	do	Pumphrey, T., et al trustees	149 40	149 40	0	
1966	do	of 25	496	do	Bacon, R. A.	125 73	98 83	26 89	
1967	do	of 26	496	do	Reisinger, F. E.	156 50	121 96	34 54	
1968	do	of 26	496	do	Landright, F.	118 45	97 59	20 86	
1969	do	of 27	496	do	Vernon, Henry T.	102 80	85 53	17 27	
1970	do	of 27	496	do	Kepler, J. G.	232 87	186 77	147 10	
1971	do	of 28	496	do	Arnold, Ann E.	129 40	114 96	14 44	
1973	do	of 28	496	do	Ward, William H.	308 02	291 83	16 19	
1974	do	of 28	497	do	Connolly, J. C.	335 46	291 83	43 63	
1979	do	28	497	do	Clark, H. F.	181 04	158 88	22 16	
1980	do	1	498	do	Cullane, Patrick	178 83	157 08	21 85	
1981	do	33	498	do	Klendenat, Jacob	181 04	158 88	22 16	
1982	do	34	498	do	O'Meara, W. C.	156 46	134 83	21 63	
1983	do	35	498	do	do	78 25	67 17	11 08	
1984	do	of 36	498	do	Colman, J. V. and T. Crowley	102 80	91 72	11 08	
1985	do	of 36	498	do	do	181 03	158 88	22 15	
1986	do	of 37	498	do	Riley, Terrence W.	178 03	155 88	22 15	
1987	do	38	498	do	Snedley, Anton	295 58	178 05	117 53	
1988	do	39	498	do	do			27 56	

Statement of lien certificates held by First National Bank of New York, et al., as affected by the revision of assessments—Continued.

Number of lien certificate.	Date of issue.	Lot.	Square.	Street.	To whom assessed.	Amount of original assessment.	Net amount of revised assessment.	Reduction.	Amount paid into court, &c.
2059	Dec. 14, 1872	of 6	536	4½ street	Yonn, Mark	\$141 64	\$123 91	\$17 73	
2060	do	of 6	536	do	Larnbert, Rosetta	141 64	123 92	17 72	
2061	do	of 6	537	do	Bacon, Reuben	186 12	172 76	132 63	
2062	do	9	537	do	do	153 19	177 76	24 50	
2063	do	13	537	do	Pepper, M.	153 19	100 69	52 50	
2064	do	of 13	537	do	Hertfurth, A., trustee	153 19	94 60	59 59	
2065	do	of 13	537	do	Pepper, M.	8 37	8 94	25 57	
2066	do	of 17	537	do	do	100 68	76 73	23 95	
2067	do	of 18	537	do	Kochela, Mary	100 68	124 51	42 54	
2068	do	of 10	538	do	Hess, Magdalena	100 68	173 51	24 24	
2069	do	of 10	538	do	do	100 68	173 51	24 24	
2070	do	of 14	538	do	Kersey, James	102 51	161 67	13 97	
2071	do	of 14	538	do	Norman, Samuel	113 64	157 67	20 59	
2072	do	of 15	538	do	do	113 64	157 67	20 59	
2073	do	of 15	538	do	Cull, Patrick	157 67	122 94	31 49	
2074	do	of 14	539	do	Pumphrey, J. B.	159 68	136 71	23 49	
2075	do	of 14	539	do	Buckley, William, sr.	508 22	232 19	240 53	
2076	do	of 11	540	do	do	385 70	235 19	40 51	
2077	do	of 11	540	do	do	385 70	235 19	40 51	
2078	do	of 12	540	do	do	50 57	50 57	5 55	
2079	do	of 12	540	do	Van Riewick, John	180 41	135 51	24 60	
2080	do	of 13	540	do	Frazier, J.	159 84	132 64	24 18	
2081	do	of 13	540	do	Culhane, Patrick	159 84	113 56	24 48	
2082	do	of 11	540	do	do	113 56	113 56	20 28	
2083	do	of 11	541	do	Miller, Mary	79 04	79 04	91 01	
2084	do	of 11	541	do	do	319 73	226 77	93 01	
2085	do	of 12	541	do	Farnham, Robert	335 72	242 32	93 40	
2086	do	of 13	541	do	do	319 77	222 88	96 89	
2087	do	of 14	541	do	Farnham, Jane	319 77	222 88	96 89	
2088	do	of 16	542	do	Smoot, S. S.	335 73	246 83	88 90	
2089	do	of 11	542	do	do	335 73	246 83	88 90	
2090	do	of 12	542	do	do	343 54	301 59	41 65	
2091	do	of 12	542	do	do	343 54	301 59	41 65	
2092	do	of 12	542	do	do	327 09	285 44	41 65	
2093	do	of 14	542	do	Riley, W. R.	327 09	285 44	41 65	
2094	do	of 10	543	do	do	327 09	285 44	41 65	
2095	do	of 11	543	do	do	343 53	301 59	41 64	
2096	do	of 11	543	do	do	343 53	301 59	41 64	
2097	do	of 12	543	do	Reiser, George C.	183 55	142 77	20 72	
2098	do	of 13	543	do	Pasenger, C. and M.	183 55	142 77	20 72	
2099	do	of 14	543	do	Sheffert, Leonard	118 25	76 50	41 75	
2100	do	of 14	543	do	do	118 25	76 50	41 75	
2101	do	of 14	544	do	Cassell, John T.	218 63	198 14	20 49	
2102	do	of 10	544	do	do	218 63	198 14	20 49	
2103	do	of 10	544	do	do	239 08	231 70	57 38	

2115	do	of 11	544	do	Coombes, J. J., et al.	239 90	263 04	50 76
2116	do	13	544	do	Clark, Reuben E.	233 36	260 83	43 54
2117	do	13	544	do	Farley, John, and wife	233 36	260 81	43 54
2118	do	14	544	do	do	323 36	325 08	43 54
2119	do	16	544	do	do	312 19	325 08	43 54
2120	do	a. 1	544	do	Riley, Ferruccio	173 94	150 79	23 15
2121	do	a. 2	545	do	do	173 94	150 79	23 15
2122	do	a. 3	545	do	do	173 94	150 79	23 15
2123	do	a. 4	545	do	do	173 94	150 79	23 15
2124	do	a. 5	545	do	Smolay, Antonio	167 24	167 24	33 22
2125	do	a. 6	545	do	Willie, Charles	170 60	137 38	33 22
2126	do	of a. 9	545	do	Mades, James	156 48	138 48	37 99
2127	do	of a. 10	545	do	Phillips, John	116 60	90 28	20 35
2128	do	of a. 10	545	do	Hawes, C. W.	72 89	54 48	18 32
2129	do	of a. 11	545	do	do	173 94	122 11	50 83
2130	do	of a. 12	545	do	Clark, R. F.	169 38	137 41	31 97
2131	do	of a. 13	545	do	do	110 35	79 17	31 18
2132	do	of a. 13	545	do	Clark, R. B.	141 65	123 98	17 72
2133	do	of a. 15	555	do	Taylor, M. E.	172 94	150 78	22 16
2134	do	20	545	do	do	189 38	167 23	22 15
2135	do	a. 7	545	do	Smithson, Sarah	181 04	188 88	23 16
2136	do	a. 8	545	do	Fleming, Patrick	181 04	188 88	23 16
2137	do	a. 8	545	do	Wood, William P.	982 32	872 69	119 63
2138	do	1	546	do	Smoot, S. S.	538 34	466 92	66 46
2139	do	10	546	do	do	363 07	317 78	44 32
2140	do	11	546	do	do	317 18	276 93	40 25
2141	do	12	546	do	do	317 18	276 93	40 25
2142	do	13	546	do	do	316 92	276 71	40 21
2143	do	14	546	do	do	316 92	276 71	40 21
2144	do	15	546	do	do	333 63	283 39	40 24
2145	do	16	546	do	do	284 28	244 04	40 24
2146	do	17	546	do	do	312 96	268 66	44 30
2147	do	18	546	do	Maack, William H. N.	486 90	419 45	66 45
2148	do	19	546	do	do	338 82	314 15	44 67
2149	do	8	547	do	Smoot, S. S.	344 37	299 90	44 47
2150	do	9	547	do	do	300 61	316 40	44 31
2151	do	10	547	do	do	361 85	317 17	44 68
2152	do	11	547	do	do	347 09	302 41	44 68
2153	do	12	547	do	do	636 65	469 54	167 11
2154	do	1	547	do	Woodward, William R.	636 65	469 54	167 11
2155	do	2	547	do	Newman, I. J.	157 60	116 32	41 38
2156	do	of 2	547	do	Todd, William B.	283 65	269 21	74 44
2157	do	of 2	547	do	Lacy, Harriet	438 34	578 06	260 28
2158	do	1	547	do	Hoover, R. B. & T. G.	472 75	348 68	124 07
2159	do	2	547	do	Olmsstead, John F.	343 53	283 37	90 16
2160	do	3	547	do	Davidge, W. D.	355 62	282 28	90 16
2161	do	4	547	do	do	343 53	283 37	90 16
2162	do	5	547	do	do	343 53	283 37	90 16
2163	do	11	547	do	Robert, John	344 58	254 14	90 44
2164	do	12	547	do	Nugent, Snadreck	344 58	332 00	12 58
2165	do	and 3	547	do	Chandler, Daniel F.	699 15	635 46	63 69
2166	do	of 13	547	do	Johnson, E.	107 16	79 08	28 13
2167	do	of 14	547	do	Collins, Alfred	89 63	65 67	23 36
2168	do	of 14	547	do	Normant, Samuel	175 70	160 91	75 69
2169	do	of 14	547	do	do	175 70	160 91	75 69

Statement of lien certificates held by First National Bank of New York et al., as affected by the revision of assessments—Continued.

Number of lien certificate.	Date of issue.	Lot.	Square.	Street.	To whom assessed.	Amount of original assessment.	Net amount of revised assessment.	Reduction.	Amount paid into court, &c.
2199	Feb. 1, 1873	M	25	M street.	Dimock, Anthony.	\$1,858 37	\$1,001 37	\$857 00	
2204	do	37	24	do	Day, Alfred.	140 71	103 83	36 88	
2207	do	D	24	do	Blanchard, William	175 71	129 58	46 12	
2209	do	D	24	do	do	175 71	129 58	46 13	
2210	do	A	24	do	do	175 71	129 58	46 13	
2215	do	of 3	24	do	Winter, John.	197 54	93 14	98 55	
2216	do	1	14	do	Castlemann, S. D.	343 53	253 37	90 17	
2217	do	11	14	do	Serrin, David S. D.	343 53	253 37	90 16	
2218	do	12	14	do	Castlemann, S. D.	343 53	253 37	90 16	
2221	do	3	13	do	McC, William.	630 53	484 90	145 63	
2222	do	3	13	do	Mackall, Benjamin F.	400 55	395 22	105 03	
2225	do	of 2	13	do	Green, Samlbury	13 62	13 05	4 97	
2226	do	E	13	do	Green, Samlbury	136 06	92 99	43 07	
2229	do	of 3	13	do	Vox, John E.	107 16	98 56	8 60	
2230	do	of 3	13	do	Young, George	107 16	98 56	8 60	
2232	do	of 3	13	do	Arnold, David	346 53	287 22	79 46	
2235	do	of 5	18	I street.	Kerrand, A. E.	278 20	239 74	38 55	
2239	do	of 5	18	do	Sutton, R. M.	88 83	73 74	15 09	
2244	do	of 9	118	do	Scott, Samuel	145 85	126 54	19 31	
2249	do	of 31	105	do	Smith, Thomas	192 86	126 54	100 31	
2251	do	of 33	105	do	do	133 79	71 24	62 55	
2255	do	of 39	105	do	do	133 79	71 24	62 55	
2260	do	of 2	106	do	Embrey, James H.	171 26	91 22	80 04	
2270	do	of 2	106	do	Brown, Marshall	219 42	148 01	71 41	
2291	Feb. 2, 1873	of 2	497	do	do	58 52	38 09	17 43	
2295	do	of 19	557	G street.	Good, Charles	382 83	288 70	144 13	
2298	do	of 9	557	do	Redmily, James	614 97	477 04	137 93	
2304	do	of 9	557	do	McLennan, Joseph	184 50	109 80	74 70	
2304	do	of 10	557	do	do	184 50	109 80	66 50	
2305	do	of 1	529	do	Bowen, George	203 06	147 77	55 29	
2305	do	of 3	545	do	Williams, Thomas	180 26	141 57	47 69	
2308	do	of 4	545	do	Lynch, Thomas	100 78	84 95	15 81	
2364	do	of 4	555	do	Lynch, Thomas	100 78	84 95	15 81	
2439	Feb. 6, 1873	of 20	298	12th street.	Green, Edwin	30 25		30 25	
2449	do	of 1	294	do	Barker, James A.	10 90		10 90	
2492	do	of 9	319	do	Barker, James W.	68 20		68 20	
2472	do	of 9	319	do	Miller, Mary	121 58	101 17	20 41	
2511	Feb. 6, 1873	of 13	314	do	do	131 53	101 17	30 41	
2512	do	of 13	314	do	do	121 53	101 17	20 41	

2313	do	a. 14	314	do	Stewart, H. Clay	121 08	62 82	98 56
2318	do	of 6	318	do	Stewart, James W	157 00	97 93	48 81
2344	do	a. 14	319	do	Stewart, George C.	401 00	828 08	73 91
2356	do	of 14	320	do	do	154 25	154 25	159 59
2368	do	a. 14	327	do	Butler, Amelia	154 35	151 65	34 00
2399	do	of 14	329	do	Chapman, M. V.	154 25	151 70	2 55
2397	do	of 14	331	do	Schneider, John	141 00	118 02	28 88
2416	do	of 14	332	do	Fitzhugh, J. W	94 08	119 64	5 04
2424	do	of 14	333	do	Yeatman, J. H	154 25	128 20	28 05
2430	do	of 14	334	do	Yeatman, J. H	308 50	197 01	110 80
2432	do	of 11	335	do	Ball, Princy Ann	148 45	171 80	82 05
2436	do	of 11	336	do	Fisher, Thomas J, trustee	247 41	194 54	5 12
2467	do	of 2	337	do	Phillip, William H.	183 27	183 13	42 87
2468	do	of 19	338	do	Culver, F. P.	308 27	222 07	87 20
2469	do	of 2	406	do	Ingersoll, Julia	20 70	.....	20 70
2489	do	of 13	407	do	Bar, James A	20 70	.....	20 70
2496	do	of 3	344	do	Jones, William H.	44 38	.....	44 38
2707	do	of 3	344	do	Bennett, C. W	22 18	.....	22 18
2712	do	of 1	318	do	Stewart, H. Clay	22 18	.....	22 18
2717	do	of 1	318	do	do	22 18	.....	22 18
2718	do	of 1	318	do	do	44 51	.....	44 51
2719	do	of 10	319	do	Barker, James W	44 51	.....	44 51
2720	do	of 9	319	do	do	20 00	.....	20 00
2721	do	of 9	319	do	do	42 10	.....	42 10
2722	do	of 1	327	do	Stewart, George T	88 72	.....	88 72
2725	do	of 6	337	do	Maur, Isabelle	4 44	.....	4 44
2728	do	of 20	338	do	Yeatman, John H	43 17	.....	43 17
2729	do	of 19	338	do	do	43 17	.....	43 17
2731	do	of 18	338	do	Palley, Elizabeth G	6 84	.....	6 84
2732	do	of 17	338	do	do	3 80	.....	3 80
2734	do	of 17	338	do	Stewart, Edwin	21 04	.....	21 04
2743	do	of 1	428	do	Allen, George	598 82	377 78	219 04
2760	do	of 4	374	do	Blake, John B.	418 07	398 53	114 52
2762	do	of 6	374	do	Beall, Benjamin, trustee	138 76	70 32	69 43
2763	do	of 7	374	do	do	138 76	4 71	2 24
2776	do	of 3	344	do	do William H	168 10	124 62	38 48
2777	do	of 9	345	do	Jones, John	118 83	80 12	38 67
2779	do	of 1	318	do	Bennett, C. W	407 08	331 37	42 69
2784	do	of 1	318	do	Stewart, H. Clay	117 44	187 80	29 64
2785	do	of 10	318	do	do	204 95	20 65	20 65
2786	do	of 9	319	do	Barker, James W	411 07	351 60	59 47
2787	do	of 9	319	do	do	153 14	153 14	26 74
2788	do	of 9	319	do	do	384 03	307 77	56 26
2789	do	of 1	337	do	Stewart, George T	708 12	461 51	246 61
2792	do	of 6	387	do	Maur, Isabelle	98 05	25 86	9 09
2795	do	of 20	388	do	Yeatman, John H	383 26	324 64	57 62
2796	do	of 19	388	do	do	340 18	203 54	136 64
2798	do	of 18	388	do	Palley, Elizabeth G	53 88	47 44	9 14
2799	do	of 17	388	do	do	52 72	47 44	5 28
2800	do	of 17	388	do	Conoran, W. W	226 85	160 21	66 64
2801	do	of 6	166	do	Alexander, Columbus	226 85	160 21	66 64
2840	do	of 2	103	do	Harris, Thomas DeK	43 12	25 60	16 43
2849	do	of 2	164	do	Connecticut avenue	91 42	55 73	35 67

Statement of lien certificates held by First National Bank of New York et al., as affected by the revision of assessments—Continued.

Number of lien certificate.	Date of issue.	Lot.	Square.	Street.	To whom assessed.	Amount of origi. assessment.	Net amount of revised assess. ment.	Reduction.	Amount paid into court, &c.
15	Apr. 14, 1873	58		7th street road	Donaldson, F. A.	\$39 20	\$9 80	\$29 50	
16	do	59, 60		do	Matlock, Jeremiah.	78 56	19 65	58 91	
17	do	62, 63		do	Widmayer, Christopher.	78 56	19 60	58 96	
18	do	64 to 67		do	Weaver, Thomas.	151 35	37 77	113 58	
20	do	69, 70		do	Edin, C. J.	72 76	18 15	54 61	
21	do	71, 100		do	Tobner, Joanna.	133 64	33 53	100 21	
22	do	72, 73		do	Dyer, Louis.	12 78	18 13	54 63	
23	do	at 76		do	Quiller, John.	19 45	4 85	14 60	
24	do	of 76, 77		do	Donavan, Thomas.	29 17	7 28	21 89	
25	do	78, 79		do	Holan, John.	43 62	12 13	36 49	
26	do	80		do	Lewis, L. A.	24 31	6 06	18 25	
27	do	83		do	White, Thomas	24 31	6 06	18 25	
28	do	84		do	White, Michael	24 31	6 06	18 25	
29	do	85		do	Geyer, R. C.	24 31	6 06	18 25	
30	do	86		do	Harrington, William.	24 31	6 06	18 25	
31	do	87		do	Myers, Matthew.	72 73	18 19	54 54	
32	do	88, 89, 90		do	Donohue, Thomas.	24 31	6 07	18 24	
33	do	91		do	Whitaker, J. T.	24 31	6 07	18 24	
34	do	94, 95		do	Carroll, Roger.	43 62	12 09	36 49	
35	do	at 96		do	Fleming, K. I.	20 43	5 23	15 20	
36	do	of 96 & C		do	Branaed, Normand	870 43	218 23	652 20	
37	do	96 & C		do	Maloney John	24 31	6 06	18 25	
38	do	98		do	Realing, W. R.	24 31	6 06	18 25	
39	do	101 to 104		do	Backus, August.	27 23	25 25	73 40	
40	do	105		do	Brown, Marshall	24 31	6 06	18 25	
41	do	106 and 107		do	Wright, J. W., and J. B.	670 45	671 51	2 06	
42	do	108 & 6		do	Clarkson, Robert	72 83	18 19	54 64	
43	do	109		do	Bright, George T.	42 62	12 13	36 49	
44	do	110 & 6		do	King, Thomas E.	42 62	12 13	36 49	
45	do	1 of 32		do	Young, Richard	42 62	12 13	36 49	
46	do	31, 32		do	Eller, P. H.	42 62	12 13	36 49	
47	do	33, 34		do	Wiley, W. I.	42 62	12 13	36 49	
48	do	35		do	Mullen, P. I.	42 62	12 13	36 49	
49	do	36		do	Turner, John.	586 39	146 24	440 15	
50	do	37		7th street road, west side.					
51	do	38		do	Merling, Darius.	255 27	63 69	191 58	
52	do	39		do	Wineberger, John T.	127 96	31 92	96 04	
53	do	40		do	Kraus, Conrad.	46 62	12 13	36 49	
54	do	41		do	Devan, Johnna	105 80	23 77	82 03	
55	do	42		do					

60	do	do	do	do	Long, Margaret	180 80	92 82	68 18
61	do	do	do	do	Williams, Christian	180 80	92 82	68 18
62	do	do	do	do	Summey, Benjamin	1,239 97	306 75	929 52
63	do	do	do	do	Heine, William	577 64	144 06	433 58
64	do	do	do	do	Helmiller, Henry	820 98	80 28	240 60
65	do	do	do	do	Ruppert, John	943 12	210 27	632 85
66	do	do	do	do	Saul, John	1,675 62	418 12	1,257 40
67	do	do	do	do	Pearson, Catherine, heirs of	425 74	106 18	319 56
68	do	do	do	do	White, Mrs. H., heirs of	5,224 44	1,302 96	3,921 48
69	do	do	do	do	Carusi, B., trustee	621 40	154 96	466 42
70	do	do	do	do	Lacomb, George	48 62	12 13	36 49
72	do	do	do	do	Fitzgerald, Dennis	124 03	30 94	93 09
74	do	do	do	do	Shoemaker, A. bagall	920 82	229 67	691 15
75	do	do	do	do	side.			
76	do	do	do	do	Bell, William	1,188 54	296 42	892 12
77	do	do	do	do	King, John	1,175 43	43 75	131 68
78	do	do	do	do	Mitchell, George W.	626 52	131 06	394 46
79	do	do	do	do	Claggett, John B.	289 30	71 08	218 22
80	do	do	do	do	Van Riewick, John	278 58	69 73	208 85
81	do	do	do	do	Shoemaker, A. C. P.	2,742 04	683 86	2,058 18
82	do	do	do	do	Schade, J. H.	542 24	135 23	407 01
83	do	do	do	do	Cowling, W. H.	339 38	84 64	254 74
84	do	do	do	do	Reeves, Samuel, heirs of	1,041 30	259 70	781 60
85	do	do	do	do	Bell, William	312 74	78 00	234 74
86	do	do	do	do	Butt, Sarah A.	2,001 26	499 61	1,501 65
87	do	do	do	do	Cissell, Thomas	284 88	71 06	213 87
88	do	do	do	do	McChesny, J. H.	142 46	35 53	106 93
89	do	do	do	do	Cammack, John	308 46	76 98	231 53
90	do	do	do	do	Gass, S. G.	458 97	114 72	344 25
91	do	do	do	do	May, Phillip	435 66	108 92	326 74
92	do	do	do	do	Widmeyer, John, heirs of	433 71	108 17	325 54
93	do	do	do	do	Washington Schutzen Park	836 31	209 08	627 23
94	do	do	do	do	Glick, John H.	308 40	75 67	237 73
95	do	do	do	do	Bakersmith, John	91 78	22 89	68 99
96	do	do	do	do	Krause, Henry	94 20	23 49	70 71
102	do	do	do	do	Sterling, Joseph A.	48 62	12 13	36 40
104	do	do	do	do	Prescott, John A.	97 24	24 25	72 99
105	do	do	do	do	Johnson, Joseph T.	48 62	12 13	36 49
106	do	do	do	do	Bell, Mrs. W. D.	486 51	101 13	384 38
111	do	do	do	do	Buxton, C. H.	102 69	25 61	77 06
112	do	do	do	do	Kimball, Mrs. H. L.	51 35	12 80	38 55
113	do	do	do	do	Cole, John A.	27 03	6 74	20 29
115	do	do	do	do	Barbour, A. L. & Co.	515 94	128 48	387 46
114	do	do	do	do	Lacomb, George	24 31	6 06	18 25
116	do	do	do	do	Barbour, A. L. & Co.	41 69	.....	41 69
117	do	do	do	do	Davis, Henry S.	684 52	.....	684 52
118	do	do	do	do	Babbington, W., heirs of	392 67	100 00	292 67

\$100, February 6, 1875.

Statement of lien certificates held by First National Bank of New York et al., as affected by the revision of assessments—Continued.

Number of lien certificate.	Date of issue.	Lot.	Square.	Street.	To whom assessed.	Amount of original assessment.	Net amount of revised assessment.	Reduction.	Amount paid into court, &c.
119	Feb. 17, 1873	.....	.....	Columbia turnpike	Corcoran, W. W.	\$1,077 78	.....	\$1,077 78	.....
120	.....	.....	.....	do	Palmer, Dr.	537 72	.....	537 72	.....
121	.....	.....	.....	do	Ruppert, Anthony	601 98	.....	601 98	.....
122	.....	.....	.....	do	Auth, Santus	383 25	.....	383 25	.....
123	.....	.....	.....	do	Louer, George	453 70	.....	453 70	.....
124	.....	.....	.....	do	Rives, Frank	649 73	.....	649 73	.....
125	.....	.....	.....	do	Dockery, W. E.	1,207 50	.....	1,207 50	.....
126	.....	.....	.....	do	Reform farm	906 23	.....	906 22	.....
127	.....	.....	.....	do	Veach, John, heirs of	524 74	.....	524 74	.....
128	.....	.....	.....	do	Rives, Wright	747 61	.....	747 61	.....
129	.....	.....	.....	do	Talbot, Thomas	637 36	.....	637 36	.....
130	.....	.....	.....	do	Our, Matilda	306 00	.....	306 00	.....
131	.....	.....	.....	do	Mills, Clark	603 16	.....	603 16	.....
132	.....	.....	.....	do	Howard, James Q.	496 15	.....	496 15	.....
133	.....	.....	.....	do	Kenny, Christian	215 20	.....	215 20	.....
134	.....	.....	.....	do	Augustine, J. F.	115 56	.....	115 56	.....
135	.....	.....	.....	do	Stevenson, Henry	100 53	.....	100 53	.....
3387	Sept. 24, 1872	7	251	.....	District of Columbia	82 00	.....	82 00	.....
3388	Feb. 6, 1872	of 4	315	.....	do	24 70	.....	24 70	.....
3389	Feb. 4, 1872	of 4	213	.....	do	3 81	.....	3 81	.....
3427	Feb. 4, 1873	a. 4	208	.....	do	54 36	.....	54 36	.....
2528	Feb. 4, 1873	a. 4	316	.....	do	3 81	.....	3 81	.....
5715	Feb. 12, 1873	a. 30	314	.....	do	24 70	.....	24 70	.....
145	Feb. 17, 1873	.....	314	12th street, west side, Columbia turnpike, H street, 12th street, west side.	do	125 80	.....	125 80	.....
136	.....	.....	.....	Columbia turnpike	do	19 32	.....	19 32	.....
137	.....	.....	.....	do	Healy, Mrs. H. G.	216 08	.....	216 08	.....
138	.....	.....	.....	do	Ghegan, Philip	331 35	.....	331 35	.....
139	.....	.....	.....	do	Schaeffer, S. F.	125 00	.....	125 00	.....
140	.....	.....	.....	do	Jordan, Martha E.	93 75	.....	93 75	.....
141	.....	.....	.....	do	King, J. J.	1,277 08	.....	1,277 08	.....
142	.....	.....	.....	do	Rives, John C., estate of	1,000 56	.....	1,000 56	.....
5385	Nov. 22, 1872	.....	.....	17th street, New York avenue to M street.	Met. R. R. Co.	7,852 80	\$7,362 00	490 80	Duplication of liens, see No. 3342.
						279,009 77	173,499 13	105,550 50	

APPENDIX X 19.

TABLE M.

SPECIAL ASSESSMENT DIVISION.

APPENDIX 5.—Statement of the amounts charged in the revision of special assessments against the several street railroad companies in the cities of Washington and Georgetown, D. C., for the pavement of the carriageway.

RECAPITULATION.

	Square yards of pavement occupied by railroad track + 2 feet outside of each outer rail.	Amount assessed against railroad company.	Amount paid by railroad company.	Balance due by railroad company.
Capitol, North O and South Washington Railroad Company.....	.....	\$2,828 85	\$2,828 85	.....
Columbia Railroad Company.....	4,871.74	11,257 27	.....	\$11,257 27
Connecticut Avenue and Park Railroad Company, in District of Columbia, or their successors.	2,218.52	6,655 56	.....	6,655 56
Metropolitan Railroad Company.....	53,306.277	162,896 10	.....	162,896 10
Washington and Georgetown Railroad Company....	15,933.24	76,313 07	12,207 27	64,105 80
	76,329.777	250,962 85	15,036 12	244,916 73

Statement of the amounts charged in the revision of assessments against street railways for the pavement of the carriageway.
 [In this statement no charge is made, nor area given, except work done by the District.]

THE CAPITOL, NORTH O STREET AND SOUTH WASHINGTON RAILROAD COMPANY.

Street.	Limite of assessment.	Square yards of pavement occupied by railroad side of each outer rail.	Amount assessed against railroad company.	Amount paid by railroad company.	Balance due by railroad company.	Rate per square yard charged railroad company.	
Maryland avenue	From 7th street west to 1st street west.						No charge to railroad company.
1st street west	From Maryland avenue to G street north.						Railroad track laid after improvement.
G street north	From 1st street west to 4th street west.						No charge to railroad company.
4th street west	From G street north to O street north.						Do.
New Jersey avenue	From O street north to P street north.						No assessment.
P street north	From New Jersey avenue to 11th street west.						No charge to railroad company.
O street north	do.						Do.
11th street west	From P street north to E street north.						Do.
E street north	From 11th street west to 14th street west.						Do.
14th street west	From E street north to Ohio avenue.						Do.
Ohio avenue	From 14th street west to 12th street west.						Do.
12th street west	From Ohio avenue to Virginia avenue.						Do.
Virginia avenue	From 12th street west to 9th street west and C street south.						Do.
C street south	From 9th street west to 7th street west and Maryland avenue.						Do.
			\$2,828 85	\$2,828 85			On improvement of Pennsylvania avenue from Capitol to 15th street west.
			2,828 85	2,828 85			

THE COLUMBIA RAILROAD COMPANY.

	From 9th street west to 14th street west.	329.00	\$1,052.80	\$3.20	Lien certificate issued for \$1,052.80 by board of public works September 2, 1872, and held by First National Bank of New York City.
New York avenue.....					
K street north.....	From 7th street west to 23d street west.	204.66	725.31	3.20	
Massachusetts avenue.....	From New York avenue to Boundary street.	795.55	2,625.31	3.30	
H street north.....	From 4th street west to 1st street east.	1,253.31	2,264.96	1.80	
H street north.....	From 1st street east to 15th street east.	2,262.22	4,588.89	1.75	Only in track.
		4,871.74	11,237.27		

THE CONNECTICUT AVENUE AND PARK RAILWAY COMPANY, IN DISTRICT OF COLUMBIA, OR THEIR SUCCESSORS.

Connecticut avenue	From H street north to Boundary st.	2, 218. 52	\$6, 655 56	\$5 00
		2, 218. 52	6, 655 56	.. .. .

THE METROPOLITAN RAILROAD COMPANY.

	From 1st street east to 11th street east.	7,874.00	\$25,984.50	\$3.30	
East Capitol street.....					
1st street east.....	From C street south to C street north.	1,476.16	4,428.48	\$3.00	No charge to railroad company.
B street north.....	From Delaware avenue to 1st street east.				Do.
Delaware avenue.....	From B street north to C street north.				
C street north.....	From 1st street west to 3d street east.	2,064.67	6,613.33	3.20	
New Jersey avenue.....	From B street north to O street north.	341.40	1,126.62	3.30	
D street north.....	From 4th street west to New Jersey avenue.	1,453.67	4,797.12	3.30	
Indiana avenue.....	From 4th street west to 1st and C street northwest.				No assessment.
Louisiana avenue.....	From City Hall to 5th street west.				Do.
5th street west.....	From Louisiana avenue to F street north.				No charge to railroad company.
F street north.....	From 5th street west to 14th street west.	{ 1,362.87 2,048.00 275.33 }	{ 4,497.54 7,164.50 825.99 }	{ 3.30 3.50 3.00 }	Wood. This charge was for Belgian pavement; none charged to property holders. Concrete.

Statement of the amounts charged in the revision of assessments against street railways for the payment of the carriage way—Continued.

THE METROPOLITAN RAILROAD COMPANY—Continued.

Street.	Limits of assessment.	Square yards of pavement occupied by railroad track, plus two feet out side of each outer rail.	Amount assessed against railroad company.	Amount paid by railroad company.	Balance due by railroad company.	Rate per square yard charged railroad company.
14th street west.....	From F street north to H street north.	1,965.90	\$5,897 70	.....	\$5,897 70	\$3 00
E street north.....	From 16th street west to Vermont avenue.	141.777	467 87	.....	467 87	3 50
H street north.....	From 14th street west to 15th street west.	.....	.....	.....	.....	.....
17th street west.....	From New York avenue to M street north.	2,454.00	7,362 00	.....	7,362 00	3 00
Connecticut avenue.....	From H street north to Boundary st.	5,975.83	17,927 49	.....	17,927 49	3 00
P street north.....	From New Jersey avenue to Rock Creek.	2,323.28 250.73	4,878 89 1,070 16	.....	4,878 89 1,070 16	3 10 3 00
7th street road.....	.....	.....	.....	.....	.....	.....
Boundary street.....	From 6th street west to 9th street west.	261.29	914 52	.....	914 52	3 50
8th street west.....	From M street north to Boundary.....	2,729.56	8,188 56	.....	8,188 56	3 00
9th street west.....	From Pennsylvania avenue to M street north.	8,451.60	17,868 26	.....	17,868 26	3 80
9th street west.....	From B st. north to Pennsylvania avenue.	8,219.88	24,659 64	.....	24,659 64	3 10
F street north.....	From 7th street west to 10th street west.	.....	.....	.....	.....	.....
B street north.....	From 8th street west to 7th street west.	.....	.....	.....	.....	.....
6th street west.....	From Pennsylvania avenue to Water street.	.....	.....	.....	.....	.....
Louisiana avenue.....	From 2d street west to 6th street west.	.....	.....	.....	.....	.....

No assessment.

Lien certificate for \$7,862.80, issued by board of public works, November 22, 1872, and held by First National Bank of New York City.

Wood.
Concrete.

No charge to railroad company.

Concrete.
Wood.
Concrete.

No charge to railroad company.

Do.

Do.

Do.

Do.

44 street west	From Missouri avenue to P street south.				Do.
O street south	From 44 street west to Water street		1,275 15		Do.
Pennsylvania avenue	From Capitol to 15th street west.	138 00	444 80		Concrete. Lien certificate for \$444.80, issued by board of public works, September 2, 1872, and held by First National Bank of New York City.
New York avenue	From 9th street west to 15th street west.				Concrete.
		340 00	1,020 00	3 00	Wood.
West street	From High street to Rock Creek.	{ 1,450 00	4,085 00	1 90	Do.
3d street	From High street to Fayette street		4,785 00	3 30	No assessment.
Fayette street	From 3d street to 2d street				Do.
2d street	From Fayette street to High street	1,600 00	5,280 00	3 30	Wood.
Dunbarton street	From Green street to Monroe street				No charge to railroad company.
Dunbarton street	From Green street to Congress street.				No assessment.
Dunbarton street	From Congress street to High street.				No charge to railroad company.
Montgomery street	From Bridge street to West street.	600 00	300 00	65	Wood.
High street	From the Canal to Road street	250 00	825 00	3 30	
		53,306.277	162,898 10		

THE WASHINGTON AND GEORGETOWN RAILROAD COMPANY.

8th street east	From Pennsylvania avenue to M street south.	1,155 55	\$4,044 42	\$3 50	Wood. Lien certificate for \$2,884.50, issued by board of public works April 15, 1873, and held by First National Bank of New York City.
Pennsylvania avenue southeast.	From 1st street east to 8th street east.				Track laid in the middle parking of the street at company's expense.
B street south	From New Jersey avenue to 2d street east.	{ 71 11	248 89	2 60	Wood.
1st street west	From B street south to Pennsylvania avenue.	{ 525 63	1,682 02	3 20	Asphalt.
1st street west	From Pennsylvania avenue to I street north.				No assessment.
C street north	From 1st street west to 3d street east.	820 00	2,624 00	3 20	Railroad track laid after improvement.
New Jersey avenue	From B street north to O street north.	188 33	621 49	3 30	
Pennsylvania avenue	From Capitol gates to 15th street west.				Payment made July 17, 1877.
15th street west	From Pennsylvania avenue to New York avenue.	19,886 69	\$12,207 27		No assessment.
					Wood. Lien certificate, \$11,842.60, issued by board of public works September 26, 1872, and held by First National Bank of New York City.
Pennsylvania avenue north west.	From 15th street to Rock Creek	{ 2,424 00	8,617 00	3 50	Concrete.
9th street west	From Pennsylvania avenue to M street north.	{ 1,008 00	3,225 60	3 20	Railroad track laid after improvement.

Statement of the amounts charged in the revision of assessments against street railways for the pavement of the carriageway—Continued.

THE WASHINGTON AND GEORGETOWN RAILROAD COMPANY—Continued.

Street.	Limit of assessment.	Square yards of pavement occupied by railroad track, plus two feet out side of each outer rail.	Amount assessed against railroad company.	Amount paid by railroad company.	Balance due by railroad company.	Rate per square yard charged railroad company.	
Bridge street.....	From Rock Creek to stables near Market street.	998.89	\$3,461 11	.....	\$3,461 11	\$3 50	Wood.
7th street west.....	From B street south to river.....	1,860.00	7,068 00	.....	7,068 00	3 80	Lien certificate for \$7,068.00, issued by board of public works August 15, 1872, and held by First National Bank of New York City.
7th street west.....	From B street north to Q street north.	2,953.18	9,745 49	.....	9,745 49	3 30	No charge to railroad company.
7th street west.....	From B street north to B street south.	.....	.....	.....	.....	.....	No assessment.
7th street west.....	From Q street north to Boundary at New York avenue.....	224.00	716 80	.....	716 80	3 20	Cement. Lien certificate for \$716.80, issued by board of public works September 2, 1872, and held by First National Bank of New York City.
14th street west.....	From F street north to H street north.	555.55	1,606 66	.....	1,606 66	3 00	Lien certificate for \$4,103.30, issued by board of public works August 23, 1872, and held by First National Bank of New York City.
14th street west.....	From H street north to N street north.	1,109.00	4,103 30	.....	4,103 30	3 70	Lien certificate for \$4,103.30, issued by board of public works August 23, 1872, and held by First National Bank of New York City.
14th street west.....	From N street north to Boundary..	2,048.00	8,601 60	.....	8,601 60	4 20	Lien certificate for \$8,601.60, issued by board of public works March 22, 1873, and held by First National Bank of New York City.
		15,983.24	76,313 07	\$12,207 27	84,105 80	.....

APPENDIX X 20.

TABLE N.

SPECIAL ASSESSMENT DIVISION.

APPENDIX 6.—Statement of assessments for special improvements on property held by educational, charitable, and religious institutions, &c., exemption claimed.

To whom assessed.	Street.	Square.	Lot.	Amount.
A. B. Church	E street	457	20	\$292 11
Do	do	457	19	37 72
St. Peter's Church	2d street	733	27	108 68
Do	do	733	26	108 66
St. Vincent Orphan Asylum	do	733	30	124 02
M. J. Spaulding trust	do	733	29	108 67
Do	do	733	28	108 66
Lincoln School	do	762	5	317 46
Washington City Orphan Asylum	C street	791	a. B.	59 18
Do	do	791	a. C.	59 18
Do	do	791	a. E.	59 18
Do	do	791	a. F.	59 18
Do	13 ¹ / ₂ street	259	of 7	94 97
Do	do	259	of 8	94 98
Church	14th street	252	9	171 86
Do	do	252	of 10	127 12
Washington City Orphan Asylum	do	239	15	71 65
Do	do	239	14	71 65
Do	do	239	10	253 28
Church	6th street	846	15	195 48
Do	do	846	of 16	71 78
Do	R street	207	a. 19	97 72
Do	do	207	a. 20	97 72
Do	do	207	a. 21	97 72
Do	do	207	a. 22	97 72
Do	do	207	a. 23	97 72
St. Patrick's Church	F street	376	4 to 8	1,565 14
Weesley Church	do	488	10	432 61
Church	P street	365	a. 1	617 75
Do	do	478	1	486 73
Little Sisters of the Poor	H street	751	1 and 2	146 50
Washington Hospital for Foundlings	Johnson avenue	207	31 to 37	87 14
Colored Orphan Asylum	8th street extended		a. 115 to 119	117 85
Methodist Episcopal Church	Dunbarton street	73	39	188 98
Washington City Orphan Asylum	S street	239	13 to 15	1,043 31
Church	do	395	a. 30	192 27
Do	Beall street	73	of 46	90 22
Do	do	73	51	160 55
Gonzaga College	D street	756	7, 8	19 14
Church	do	266	a. 2	319 75
Do	do	387	a. 22	75 84
Georgetown College	C street	691	11	34 65
Colored School	do	762	5	57 64
do	do	762	4	58 84
Georgetown College	do	763	12	83 56
Gonzaga College	2d street	756	4 to 7	310 83
Mt. Olive Baptist Church	6th street	829	a. 49	37 16
Do	do	829	a. 50	37 16
St. Ann Infant Asylum	K street	39	All	508 12
Roman Catholic Church	M street	698	1 to 6	574 76
Sisters of Visitation of Georgetown	7th street	858	C, D, E, F, G	190 18
Church	1st street	692	12	204 60
Do	25th street	27	9	327 56
Do	do	27	of 8	133 28
St. Aloysius Relief Society	K street	675	225	557 38
Trustees Met. S. Bap. Asso	6th street	840	10	160 90
St. Mary's Academy	do	869	12	57 32
Do	do	869	13	114 64
Do	do	869	14	115 81
Church	do	487	of 6	85 14
Do	do	489	3	460 62
Do	do	489	of 4	141 92
Do	do	448	a. 55, 56, 57	285 69
Church and School	do	479	a. 18, 20	275 26
Chapel of Holy Communion	22d street	58	1	217 93
German Lutheran Church	do	80	9	442 10
St. Thomas Literary Society	F street	466	1, 2, 3, 4	621 06
Church	5th street	518	of 5	620 60

* Now police court.

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APPENDIX 6.—Statement of assessments for special improvements, &c.—Continued.

To whom assessed.	Street.	Square.	Lot.	Amount.
St. John's Church.....	Potomac street.....	61	120	\$533
Church.....	Congress street.....	38	of 7	510
Do.....	do.....	62	of 32	428
Do.....	do.....	73	51	505
St. Ann's Infant Asylum.....	New Hampshire ave.....	39	1, 2	800
St. John's Parish.....	Virginia avenue.....	58	1	208
Columbia College.....	do.....	83	5	281
St. Vincent Orphan Asylum.....	do.....	E. of 87	9	209
Lincoln Chapel.....	D street.....	985	1, 2	63
S. A. F. Society.....	Jefferson street.....	21	of 62	37
English Legation.....	N street.....	138	2	687
Do.....	do.....	138	1	853
St. Vincent Asylum.....	M street.....	197	of 20	94
Bethel Church.....	do.....	197	s. 15, 16, 17, of 20	465
St. Joseph Orphan Asylum.....	K street.....	622	.....	1, 115
Gonzaga College.....	do.....	622	.....	2, 350
C. M. Carlisle.....	15th street.....	196	16	329
Church.....	do.....	197	A, B, C, D, F	615
Hospital for foundlings.....	do.....	207	24 to 30	476
Church.....	do.....	207	23	786
Do.....	10th street.....	336	s. 24 and 25	186
Washington City Orphan Asylum.....	Myrtle street.....	675	s. 142 to 146	76
St. Aloysius Relief Society.....	do.....	675	222	95
St. Mary's Prot. E. Church, vestry.....	Sampson street.....	194	38	238
Chapel.....	10th street.....	387	22	199
Washington City Orphan Asylum.....	North Carolina ave.....	791	C, B, E, F	104
Church.....	do.....	922	2	40
Washington City Orphan Asylum.....	14th street.....	259	4	104
Wesley Chapel.....	5th street.....	488	of 10 & 11	112
First Colored Baptist Church.....	Monroe street.....	67	67	20
St. Vincent Orphan Asylum.....	D street.....	733	6, 4, 2	306
Georgetown College.....	do.....	763	3, 2	227
Providence Hospital.....	do.....	764	8, 9, 10	821
District of Columbia school.....	do.....	792	of 5	113
East Washington Methodist Episcopal Church.....	do.....	820	4	119
Church.....	Washington street.....	518	of 5	27
Presbyterian Church.....	8th street.....	891	s. 38	32
Capitol Hill Church.....	B street.....	789	5, 2	204
Providence Hospital.....	E street.....	764	5 to 2	480
Gonzaga College.....	C street.....	756	4, 3	993
Vestry St. James Parish.....	Maryland avenue.....	915	1 to 5	324
Church.....	3rd street.....	785	7, 6	380
St. Mark's Church.....	do.....	788	10	262
Vestry Memorial Parish.....	do.....	788	11, 9	344
Church.....	do.....	789	5	474
Ebenezer Church.....	4th street, east.....	822	8	232
Do.....	do.....	823	7	122
Columbia College.....	E street.....	83	5	85
Colored School.....	9th street.....	412	13	131
Union Chapel.....	8th street.....	891	37, 36	65
Presbyterian Church.....	do.....	891	35, 34	65
Church.....	Virginia avenue.....	847	3	66
St. Ann's Infant Asylum.....	24th street.....	39	2, 3	776
Vestry Memorial Church.....	A street.....	788	11	116
Gonzaga College.....	I street.....	622	s. 36	1, 117
Do.....	do.....	622	s. 35	2, 152
African Methodist Episcopal Church.....	B street.....	576	of 1	267
Church.....	R street.....	110	s. 7	146
Colored Catholic Benevolent Society.....	L street.....	183	of 5	138
Church.....	do.....	197	3	148
Galbraith Church.....	do.....	515	of 21	202
Church.....	do.....	525	of 2	171
Episcopal Church.....	West st., Georgetown.....	87	of 198	127
Orphan Asylum.....	do.....	99	228	268
Church.....	do.....	100	138	608
St. Paul's Church.....	23d street.....	54	of 6 & of 7	309
Church.....	20th street.....	101	29, 28	449
German Lutheran Church.....	do.....	121	5	494
Church.....	23d street.....	51	5	228
Woodstock College.....	14th street.....	209	of s. 34	4
Public School.....	do.....	209	of s. 30	34
Church.....	11th street.....	319	11	279
Female Orphan Asylum.....	do.....	346	7 & of 6	333
St. Vincent Orphan Asylum.....	10th street.....	348	11, 10	255
Church.....	K street.....	402	2, 3	391
Do.....	Gay st., Georgetown.....	62	32	203
Do.....	18th street.....	N. of 137	All	356
Church of Immaculate Conception.....	8th street.....	423	3, 4	838
Colored Baptist Church.....	do.....	429	8	450

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 341

APPENDIX 6.—Statement of assessments for special improvements, &c.—Continued.

To whom assessed.	Street.	Square.	Lot.	Amount.
Church	E street	531	2, 3	\$381 38
Do	19th street	118	12, 11	380 57
Congregational Church	10th street	375	12 to 18	422 06
St. Joseph's Orphan Asylum	do	375	25	273 98
St. Patrick's Roman Catholic Church	do	376	8 to 12	661 21
British Legation	Connecticut avenue	138	of 1	4 26
Church	3rd street	S. of 572	of 2	440 48
St. John's Church	2d st., Georgetown	61	120, 121, 14	432 00
St. Thomas Literary Society	6th street	466	1, 22, 23, 24	1, 361 71
			25, 26	
Church	do	492	of 6	186 27
Do	9th street	365	s. 1, 72, 73	155 15
Do	do	395	28, 29, 30	148 58
Fletcher Chapel	New York avenue	514	of 1	237 08
Church of the Ascension	Massachusetts avenue	282	1, 2, 3	924 85
Shiloh Baptist Church	do	371	of 3	395 07
Louise Home	do	196	All	3, 155 98
Total				54, 550 54

APPENDIX X 21.

TABLE O.

SPECIAL ASSESSMENT DIVISION.

APPENDIX 7.—Statement of drawback certificates received for account of sinking fund by this division, in accordance with orders of Commissioners of the District of Columbia, dated April 17, 1880, and July 1, 1880, and transmitted to auditor District of Columbia under order of Commissioners District of Columbia, dated March 8, 1881.

Date.	From whom received.	Amount.	Date.	From whom received.	Amount.
1880.			1880.		
July 29	George W. Beall	\$95, 015 83	Aug. 24	Collector of taxes	\$33 21
July 1	Collector of taxes	49 50	25	do	388 75
2	do	1, 743 48	26	do	156 67
3	do	874 42	27	do	85 50
6	do	226 66	28	do	9 08
7	do	667 43	30	do	594 72
8	do	66 44	31	do	553 88
10	do	517 07	Sept. 1	do	251 66
12	do	2, 272 96	2	do	318 51
13	do	870 98	3	do	854 06
14	do	369 48	4	do	608 06
15	do	239 58	6	do	27 25
17	do	32 56	8	do	323 01
19	do	34 52	9	do	1, 287 85
21	do	415 54	10	do	726 81
22	do	21 96	11	do	102 03
23	do	178 06	13	do	465 76
24	do	1, 353 45	14	do	1, 177 66
26	do	77 17	15	do	65 18
27	do	82 42	16	do	26 01
29	do	287 37	17	do	780 84
Aug. 2	do	262 40	18	do	337 17
3	do	88 13	20	do	1, 258 00
4	do	100 61	21	do	2, 748 86
5	do	463 12	22	do	66 79
6	do	159 91	23	do	1, 443 94
7	do	52 28	24	do	682 29
9	do	5 29	25	do	862 63
10	do	1, 031 09	27	do	336 07
11	do	664 98	28	do	183 59
12	do	46 81	29	do	880 60
13	do	674 19	30	do	276 76
14	do	631 61	Oct. 1	do	245 74
16	do	140 70	2	do	62 89
17	do	96 89	4	do	362 34
18	do	326 65	6	do	732 20
19	do	630 79	7	do	1, 658 86
20	do	685 18	8	do	148 98
21	do	1, 222 68	9	do	417 05
23	do	488 26	11	do	

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APPENDIX 7.—Statement of drawback certificates received, &c.—Continued.

Date.	From whom received.	Amount.	Date.	From whom received.	Amount.
1880.			1881.		
Oct. 12	Collector of taxes	\$81 44	Jan. 19	Collector of taxes	\$3
13	do	145 69	21	do	18
14	do	534 73	22	do	12
15	do	232 81	24	do	3
16	do	402 62	25	do	2
18	do	25 27	27	do	10
19	do	304 08	28	do	2
20	do	520 79	29	do	20
21	do	388 14	Feb. 1	do	2
22	do	259 49	2	do	2
23	do	366 22	3	do	3
25	do	1,067 15	4	do	17
26	do	214 29	5	do	14
27	do	146 65	8	do	3
28	do	109 23	9	do	10
29	do	74 83	10	do	10
30	do	353 57	11	do	10
Nov. 1	do	1,533 08	12	do	10
2	do	290 18	14	do	10
3	do	70 92	15	do	10
4	do	577 31	18	do	10
5	do	487 92	19	do	10
6	do	194 07	21	do	10
8	do	400 44	23	do	10
9	do	290 52	25	do	10
10	do	265 45	26	do	10
11	do	983 46	28	do	10
12	do	468 43	Mar. 1	do	10
13	do	1,819 62	2	do	10
15	do	25 92	3	do	10
16	do	307 71	5	do	10
17	do	1,388 22	8	do	10
18	do	70 16	9	do	10
19	do	43 56	10	do	10
20	do	228 47	11	do	10
22	do	570 63	12	do	10
23	do	534 02	14	do	10
24	do	380 09	15	do	10
26	do	170 36	16	do	10
27	do	174 01	17	do	10
29	do	290 92	18	do	10
30	do	113 47	19	do	10
Dec. 1	do	159 96	21	do	10
2	do	2,187 63	22	do	10
3	do	1,350 80	23	do	10
4	do	541 04	24	do	10
6	do	561 32	25	do	10
7	do	233 26	26	do	10
8	do	285 32	28	do	10
9	do	756 74	29	do	10
10	do	527 93	30	do	10
11	do	331 08	31	do	10
13	do	813 94	April 1	do	10
14	do	778 30	2	do	10
15	do	2,406 70	4	do	10
16	do	1,136 81	5	do	10
17	do	887 89	6	do	10
18	do	698 76	7	do	10
20	do	3,523 76	8	do	10
21	do	614 75	9	do	10
22	do	1,783 51	11	do	10
23	do	2,212 06	12	do	10
24	do	716 86	13	do	10
27	do	4,371 71	14	do	10
28	do	3,492 13	15	do	10
29	do	259 41	16	do	10
30	do	2,531 87	18	do	10
31	do	3,968 32	19	do	10
1881.		17,868 44	20	do	10
Jan. 4	do	216 55	21	do	10
7	do	48 76	22	do	10
10	do	68 97	23	do	10
11	do	871 18	25	do	10
12	do	118 66	26	do	10
14	do	111 67	27	do	10
15	do	337 30	28	do	10
17	do	53 03	29	do	10
18	do	87 68	30	do	10

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 343

APPENDIX 7.—Statement of drawback certificates received, &c.—Continued.

Date.	From whom received.	Amount.	Date.	From whom received.	Amount.
1881.			1881.		
May 2	Collector of taxes	\$36 68	July 11	Collector of taxes	\$50 24
3	do	18 58	14	do	152 86
4	do	596 47	15	do	184 62
5	do	81 88	16	do	185 01
6	do	349 72	18	do	851 61
7	do	460 88	19	do	99 88
9	do	129 20	20	do	37 38
10	do	62 68	21	do	472 35
11	do	8 12	22	do	574 14
12	do	42 25	23	do	175 93
14	do	119 45	26	do	634 03
16	do	261 87	27	do	39 38
17	do	102 21	29	do	99 16
18	do	331 92	30	do	1 37
19	do	39 78	Aug. 1	do	36 28
21	do	38 10	2	do	6 30
23	do	106 83	3	do	64 42
24	do	605 12	4	do	6 66
25	do	289 49	6	do	3 33
26	do	242 34	17	do	95 26
27	do	430 31	25	do	101 68
28	do	158 63	26	do	340 88
31	do	312 64	27	do	428 43
June 1	do	189 21	29	do	289 77
2	do	114 08	31	do	239 41
3	do	268 73	Sept. 1	do	119 70
4	do	120 86	2	do	16 68
6	do	151 06	3	do	19 15
9	do	329 53	5	do	177 79
13	do	87 62	7	do	79 56
14	do	15 62	8	do	626 30
15	do	180 29	10	do	9 16
16	do	1101 91	12	do	372 73
17	do	163 13	13	do	673 80
18	do	196 96	14	do	88 15
20	do	2 75	15	do	105 02
21	do	87 35	16	do	280 31
23	do	788 99	19	do	64 96
24	do	87 48	20	do	44 95
25	do	257 98	24	do	368 53
27	do	385 65	27	do	87 93
28	do	27 57	28	do	206 29
29	do	2073 23	29	do	61 39
30	do	1634 71	30	do	15 76
July 1	do	8 51	Oct. 3	do	78 31
2	do	295 23	4	do	113 09
5	do	27 62	7	do	5 42
6	do	212 61			
7	do	186 75			
9	do	149 79			
					\$244, 732 41

The above statement is a correct transcript from the cash-book and ledger under my charge.

ROGER WILLIAMS,
Bookkeeper, Special Assessment Division.

APPENDIX X 22.

TABLE P.

SPECIAL ASSESSMENT DIVISION.

APPENDIX No. 8.—Statement of collections now awaiting demand of owners of lien certificates issued by the board of public works, and not held by the commissioner of the sinking fund.

No. of lien.	Street.	Square.	Lot.	Assessed to.	Amount of certificate.	Principal.	Interest.	Total.
43 Co.	7th st. road.			Marshall Brown	\$2,690 45	\$671 51	\$508 29	\$1,179 80
488	7th street	433	6	H. R. Randall	1,025 63	454 70	358 31	813 64
500	do	435	39	B. L. and W. B. Jackson	209 88	50 23	51 04	311 15
572	do	465	65	J. L. Smith and L. A. Cook	223 89	77 00	68 70	369 59
573	do	465	66	do	223 88	77 00	68 70	369 58
620	do	469	10	Charles J. Brewer	237 80	64 20	58 49	360 49
1258	F street	169	M	Wm. P. Copeland	203 53	68 41	58 83	330 77
2776	H street	344	of 3	W. H. Jones	163 10	124 62	97 69	385 41
2818	8th street	431	of 6	R. R. Pywell	151 53	151 53	119 34	422 40
2976	10th street	340	31	John M. Simms	92 08	68 46	44 54	205 08
3157	14th street	207	79	Wm. Henderson	165 87	126 43	97 56	390 86
					5,367 64	1,940 09	1,531 49	8,839 22

The above statement is a correct transcript from the cash-book and ledger under my charge.

ROGER WILLIAMS.

Bookkeeper, Special Assessment Division.

OCTOBER 10, 1881.

APPENDIX X 23.

TABLE Q.

SPECIAL ASSESSMENT DIVISION.

APPENDIX 9.—Statement of payments made by this division on account of lien certificates issued by board of public works, and not held by the commissioner of the sinking fund.

No. of lien certificate.	Principal.	Interest.	Total.	Date of payment.	To whom paid.
958	\$523 37		\$523 37	Aug. 20, 1880	William H. Phillip.
476	23 40	\$16 20	39 60	Sept. 4, 1880	Lewis Johnson & Co.
963	1,038 67	757 36	1,796 03	do	Do.
2178	116 22	83 58	199 80	do	Do.
2130	79 17	54 67	133 84	do	Do.
2129	137 41	94 89	232 30	do	Do.
2096	58 76	42 03	100 79	do	Do.
2095	115 86	82 87	198 73	do	Do.
2079	122 04	87 63	209 67	do	Do.
2051	92 69	68 00	160 69	do	Do.
2050	77 57	56 91	134 48	do	Do.
2033	615 35	459 97	1,075 32	do	Do.
2029	142 15	57 97	200 12	do	Do.
2012	331 56	239 46	571 02	do	Do.
2008	105 15	72 76	177 91	do	Do.
1988	178 05	120 68	298 73	do	Do.
1990	95 12	64 05	159 17	do	Do.
1985	91 72	66 98	158 70	do	Do.
1981	157 08	114 72	271 80	do	Do.
1993	121 25	88 55	209 80	do	Do.
1996	158 88	116 04	274 92	do	Do.

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 345

APPENDIX 9.—Payments made by this division on account of lien certificates, &c.—Cont'd.

No. of lien certificate.	Principal.	Interest.	Total.	Date of payment.	To whom paid.
1974.....	\$308 02	\$206 54	\$514 56	Sept. 4, 1880	Lewis Johnson & Co.
1069.....	175 48	119 42	294 90	do	Do.
1073.....	105 46	71 77	177 23	do	Do.
1072.....	178 12	121 22	299 34	do	Do.
1075.....	40 49	27 55	68 04	do	Do.
973.....	385 14	268 85	653 99	do	Do.
244.....	106 71	83 71	190 42	do	Do.
3340.....	20 63	13 32	33 95	do	Do.
1964.....	107 06	72 14	179 20	do	Do.
180.....	145 08	99 74	244 82	do	Do.
161.....	139 05	95 60	234 65	do	Do.
173.....	364 02	257 95	621 97	do	Do.
310.....	233 25	168 19	401 44	do	Do.
113.....	6 74	4 90	11 64	do	Do.
65.....	77 64	61 98	139 62	do	Do.
1421.....	435 60	304 61	740 27	Sept. 10, 1880	Do.
1435.....	726 10	506 86	1,232 96	Sept. 17, 1880	Do.
1436.....	726 10	506 86	1,232 96	do	Do.
1423.....	726 11	506 86	1,232 97	do	Do.
1420.....	726 11	506 86	1,232 97	do	Do.
1234.....	816 10	574 90	1,391 00	Sept. 4, 1880	Do.
1317.....	288 00	198 24	486 24	do	Do.
1241.....	235 44	100 49	335 93	do	Do.
1272.....	314 84	217 76	532 60	do	Do.
1319.....	288 00	198 24	486 24	do	Do.
1318.....	288 00	198 24	486 24	do	Do.
1316.....	351 36	241 84	593 20	do	Do.
23.....	99 23	63 81	163 04	do	Do.
21.....	99 24	63 81	163 05	do	Do.
22.....	99 23	63 81	163 04	do	Do.
11.....	132 90	86 26	219 25	do	Do.
3341.....	143 52	92 65	236 17	do	Do.
2303.....	109 80	77 01	186 81	do	Do.
2304.....	118 00	82 76	200 76	do	Do.
264.....	177 92	136 10	314 02	do	Do.
1167.....	69 58	58 48	128 06	do	Do.
1188.....	44 93	34 62	79 55	do	Do.
1170.....	154 60	118 86	273 52	do	Do.
487.....	274 48	216 20	490 68	do	Do.
1074.....	33 77	22 96	56 75	do	Do.
1181.....	112 39	76 89	189 28	do	Do.
1173.....	71 91	49 72	121 63	do	Do.
1242.....	164 33	113 66	277 99	do	Do.
1175.....	233 19	161 23	394 42	do	Do.
1230.....	818 74	639 30	1,458 04	do	Do.
1225.....	526 51	264 31	792 82	do	Do.
1265.....	132 54	91 37	223 91	do	Do.
1266.....	132 54	91 37	223 91	do	Do.
1267.....	132 54	91 37	223 91	do	Do.
1271.....	272 63	187 96	460 59	do	Do.
291.....	84 69	68 86	153 55	do	Do.
1996.....	79 34	52 56	131 90	do	Do.
555.....	140 94	102 96	243 90	do	Do.
558.....	212 77	155 44	368 21	do	Do.
546.....	212 77	155 44	368 21	do	Do.
557.....	12 23	8 94	21 17	do	Do.
1052.....	72 71	30 16	102 87	do	Do.
1901.....	50 11	42 85	101 96	do	Do.
611.....	28 02	19 93	47 95	do	Do.
587.....	123 21	39 90	163 11	do	Do.
501.....	92 55	64 96	157 51	do	Do.
539.....	164 60	120 34	284 94	do	Do.
540.....	126 25	92 30	218 55	do	Do.
549.....	92 51	65 79	158 30	do	Do.
548.....	187 69	133 52	321 21	do	Do.
542.....	42 88	30 38	73 26	do	Do.
547.....	413 39	294 67	708 06	do	Do.
590.....	76 57	53 66	130 23	do	Do.
850.....	409 84	297 08	706 87	do	Do.
894.....	181 93	133 06	314 99	do	Do.
2285.....	477 04	336 94	813 88	do	Do.
609.....	52 67	38 70	91 37	do	Do.
980.....	461 36	337 82	799 18	do	Do.
1992.....	62 17	44 81	106 98	do	Do.
502.....	92 55	65 02	157 57	do	Do.
521.....	35 28	25 47	60 75	do	Do.
870.....	159 04	108 24	267 28	do	Do.
649.....	80 32	58 44	138 77	do	Do.
635.....	167 29	110 37	267 66	do	Do.
691.....	223 11	156 91	380 02	do	Do.

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APPENDIX 9.—Payments made by this division on account of lien certificates. &c.—Cont'd.

No. of lien certificates.	Principal.	Interest.	Total.	Date of payment.	To whom paid.
621.....	\$64 20	\$46 78	\$110 98	Sept. 4, 1880	Lewis Johnson & Co.
622.....	38 45	28 02	66 47	do	Do.
624.....	31 82	24 44	56 06	do	Do.
625.....	21 81	16 94	38 85	do	Do.
1273.....	421 58	291 59	713 17	do	Do.
637.....	157 39	110 37	267 67	do	Do.
636.....	138 10	96 90	235 00	do	Do.
34.....	39 26		39 26	do	Do.
1239.....	404 19		404 19	do	Do.
1240.....	304 75		304 75	do	Do.
1149.....	190 88	78 36	269 24	Sept. 22, 1880	Do.
1150.....	183 75	75 44	259 19	do	Do.
1151.....	119 22	48 94	168 16	do	Do.
2632.....	197 61	131 46	329 07	do	Do.
1113.....	35 92	26 93	62 85	do	Do.
1126.....	55 85	41 88	97 73	do	Do.
630.....	10 44	8 11	18 55	do	Do.
631.....	30 21	23 48	53 69	do	Do.
2064.....	100 69	71 52	172 21	do	Do.
197.....	177 90	134 22	312 12	do	Do.
276.....	176 21	132 94	309 15	do	Do.
1154.....	92 32	71 93	164 25	do	Do.
851.....	403 91	317 52	721 43	do	Do.
2114.....	190 18	147 76	337 94	do	Do.
1989.....	127 35	98 84	226 19	do	Do.
541.....	56 84	45 74	102 58	do	Do.
2511.....	101 17	62 69	163 86	Sept. 25, 1880	Do.
2512.....	101 17	62 69	163 86	do	Do.
2513.....	82 02	50 83	132 85	do	Do.
2510.....	101 17	62 69	163 86	do	Do.
1922.....	135 56	76 75	212 31	Oct. 6, 1880	Do.
1922.....	135 56	93 84	229 40	do	Do.
227.....	208 25	160 59	368 84	Oct. 9, 1880	Do.
1452.....	128 86	94 50	223 36	do	Do.
3172.....	149 44	108 43	257 87	do	Do.
517.....	102 39	83 25	185 64	Oct. 28, 1880	Do.
2123.....	167 24	130 77	298 01	do	Do.
2113.....	78 00	61 12	139 12	do	Do.
581.....	52 05	42 52	94 57	do	Do.
3042.....	216 67	139 69	356 36	Nov. 3, 1880	National Metropolitan Bank.
767.....	106 30	85 75	192 05	Nov. 6, 1880	Lewis Johnson & Co.
768.....	106 30	85 76	192 06	do	Do.
769.....	106 30	85 75	192 05	do	Do.
770.....	106 30	85 77	192 07	do	Do.
1184.....	154 09	122 33	276 42	Nov. 8, 1880	Do.
2112.....	83 61		83 61	do	George C. Reiser.
112.....	12 80	9 69	22 49	Nov. 10, 1880	Lewis Johnson & Co.
633.....	64 20	48 69	112 89	do	Do.
632.....	33 98	25 77	59 75	do	Do.
3111.....	79 63	8 10	87 73	Nov. 11, 1880	National Metropolitan Bank.
709.....	137 61	112 76	250 37	Nov. 13, 1880	Lewis Johnson & Co.
708.....	13 54	11 10	24 64	do	Do.
2023.....	178 07	141 07	319 14	Nov. 18, 1880	Do.
2024.....	136 62	108 24	244 86	do	Do.
650.....	92 00	75 93	167 93	Nov. 23, 1880	Do.
651.....	111 20	91 77	202 97	do	Do.
652.....	92 00	75 93	167 93	do	Do.
1492.....	174 27		174 27	Nov. 29, 1880	Peter Campbell.
1493.....	159 74		159 74	do	Do.
1494.....	159 74		159 74	do	Do.
1495.....	159 74		159 74	do	Do.
1496.....	159 74		159 74	do	Do.
1497.....	159 74		159 74	do	Do.
1498.....	159 74		159 74	do	Do.
1499.....	159 74		159 74	do	Do.
1500.....	159 74		159 74	do	Do.
2191.....	86 88		154 04	Dec. 4, 1880	Lewis Johnson & Co.
2028.....	161 12	67 66	161 12	do	S. J. Block.
2044.....	290 81		290 81	Dec. 7, 1880	Thomas E. Waggaman.
2060.....	123 92		123 92	do	Do.
1190.....	57 36	45 96	103 32	Dec. 10, 1880	Lewis Johnson & Co.
1189.....	75 06	60 28	135 34	do	Do.
1496.....	205 03	170 29	375 32	do	Do.
1245.....	98 93	80 16	179 09	Dec. 23, 1880	Do.
990.....	181 56	147 77	329 33	Dec. 29, 1880	Do.
1174.....	104 79	84 56	189 35	do	Do.
1292.....	199 11	161 78	360 89	do	Do.
1881.....	396 34	321 37	717 71	do	Do.
1909.....	97 59		97 59	Jan. 18, 1881	F. Lambrecht.
899.....	116 00	94 60	210 60	Jan. 25, 1881	Lewis Johnson & Co.
2624.....	19 64	15 58	35 22	do	Do.

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 347

APPENDIX 9.—Payments made by this division on account of lien certificates, &c.—Cont'd.

No. of lien certificate.	Principal.	Interest.	Total.	Date of payment	To whom paid.
1764.....	\$25 47	\$20 72	\$46 19	Jan. 25, 1881	Lewis Johnson & Co.
1716.....	161 41	131 46	292 87	Feb. 17, 1881	Do.
588.....	81 32	68 01	149 33	do	Do.
2655.....	151 33		151 33	Feb. 19, 1881	S. J. Block.
3435.....	31 72		31 72	Feb. 21, 1881	D. T. Cissell.
835.....	82 33	67 44	149 77	Feb. 23, 1881	Lewis Johnson & Co.
1253.....	64 07	52 34	116 41	do	Do.
190.....	468 55	328 12	796 67	Feb. 24, 1881	Do.
635.....	1,571 17	1,118 15	2,689 32	do	Do.
3264.....	669 57		669 57	Mar. 2, 1881	Andrew Wylie.
2893.....	90 58		90 58	do	W. F. Mattingly, receiver.
2784.....	187 80		187 80	Feb. 15, 1881	Henry Clay Stewart.
2534.....	567 62		567 62	do	Do.
2785.....	147 46		147 46	Feb. 21, 1881	Do.
2597.....	43 70	29 82	73 52	Mar. 16, 1881	Lewis Johnson & Co.
2690.....	262 74		262 74	Feb. 28, 1881	William Buckley.
2691.....	295 19		295 19	do	Do.
2692.....	50 02		50 02	do	Do.
1291.....	80 10	66 39	146 49	Mar. 18, 1881	Lewis Johnson & Co.
1290.....	2 71	2 25	4 96	do	Do.
1296.....	67 66	56 08	123 74	do	Do.
1293.....	81 70	67 72	149 42	do	Do.
1294.....	81 70	67 72	149 42	do	Do.
1279.....	349 43	289 63	639 06	do	Do.
1278.....	53 41	44 27	97 68	do	Do.
1170.....	147 01	59 60	206 61	do	Do.
2115.....	251 70	171 09	422 79	Mar. 24, 1881	Do.
881.....	1,102 76		1,102 76	Mar. 26, 1881	John F. Cox.
104 Co.....	24 25	19 28	43 53	Mar. 29, 1881	Lewis Johnson & Co.
2677.....	101 07		101 07	Mar. 30, 1881	Samuel Norment.
2678.....	157 83		157 83	do	Do.
921.....	204 83		204 83	Apr. 12, 1881	Jas. S. Edwards & C. C. Cole, trustees.
2670.....	8 04		8 04	Apr. 16, 1881	F. G. Sauer.
2671.....	76 29		76 29	do	Do.
2422.....	15 25	12 42	27 67	Apr. 22, 1881	Lewis Johnson & Co.
2418.....	19 05	15 61	34 66	do	Do.
1258.....	52 81	44 49	97 30	do	Do.
1254.....	319 76	269 39	589 15	do	Do.
184.....	214 10	182 94	397 04	do	Do.
1965.....	208 92		208 92	do	Wm. Dickson.
2258.....	126 64		126 64	do	Do.
2252.....	295 22		295 22	Apr. 23, 1881	Do.
1759.....	248 57		248 57	May 3, 1881	C. F. Wollard.
1930.....	158 87		158 87	May 5, 1881	Jas. R. Riley & H. S. Johnston.
570.....	112 85	98 24	211 09	May 23, 1881	Lewis Johnson & Co.
1661.....	71 66	60 95	132 61	do	Do.
237.....	103 52	78 95	182 47	do	Do.
1931.....	183 43		183 43	May 24, 1881	Jas. R. Riley & G. M. Pilcher.
2649.....	91 42		91 42	May 26, 1881	Lewis J. Davis.
1963.....	109 42	64 63	174 25	June 3, 1881	J. S. Edwards.
776.....	38 42	33 25	71 67	June 9, 1881	Young & Caldwell.
1438.....	399 36	272 90	672 26	June 11, 1881	Lewis Johnson & Co.
1439.....	399 36	273 12	672 48	do	Do.
1744.....	148 85	102 25	251 10	do	Do.
1959.....	112 83	85 50	198 33	do	Do.
2699.....	128 13	88 84	216 97	do	Do.
3166.....	150 62	86 61	237 23	do	Do.
3167.....	150 63	86 61	237 24	do	Do.
2684.....	177 85	94 21	272 06	June 16, 1881	Do.
1950.....	8 05	5 47	13 52	do	Do.
1815.....	98 05	62 42	160 47	do	Do.
1608.....	101 41	52 29	153 70	do	Do.
1609.....	47 20	29 04	76 84	do	Do.
1730.....	153 59	88 85	242 44	do	Do.
1563.....	136 80	93 56	230 36	do	Do.
1448.....	633 67	542 67	1,176 34	do	Do.
1635.....	300 92	33 10	334 02	do	Do.
1725.....	90 65	42 75	133 40	do	Do.
1624.....	300 92	33 10	334 02	do	Do.
1633.....	264 78	29 13	293 91	do	Do.
1440.....	453 83	324 49	778 32	do	Do.
2945.....	102 48	86 52	189 00	June 21, 1881	C. F. Baker, First National Bank, New York, by transmittal to Commissioners District Columbia. (See letter this date.)

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APPENDIX 9.—Payments made by this division on account of lien certificates, &c.—Cont

No. of lien certificate.	Principal.	Interest.	Total.	Date of payment.	To whom paid.
230.....	\$174 69	\$56 35	\$131 04	June 28, 1881	Lewis Johnson & Co.
229.....	108 77	82 06	190 83	do	Do.
91 Co.....	108 92	72 15	181 07	do	Do.
93 Co.....	209 08	138 10	347 18	do	Do.
82 Co.....	135 23	103 74	238 97	do	Do.
81 Co.....	083 86	477 37	1,161 23	do	Do.
11 Co.....	4 01	3 23	8 14	do	Do.
16 Co.....	19 65	12 82	32 47	do	Do.
57 Co.....	31 92	23 04	54 96	do	Do.
79 Co.....	70 08	45 26	115 34	do	Do.
18 Co.....	9 10	6 91	16 01	do	Do.
24 Co.....	7 28	5 92	13 20	do	Do.
29 Co.....	6 06	4 24	10 30	do	Do.
42 Co.....	24 25	16 62	40 87	do	Do.
46 Co.....	18 19	12 81	31 00	do	Do.
40 Co.....	6 08	4 03	10 11	do	Do.
1575.....	95 53	7 55	103 08	do	Do.
1576.....	166 10	13 12	179 22	do	Do.
1577.....	95 53	7 55	103 08	do	Do.
1557.....	283 95	33 13	317 08	do	Do.
1525.....	282 73	32 98	315 71	do	Do.
1437.....	453 82	310 11	763 93	do	Do.
1422.....	435 66	311 50	747 16	do	Do.
2177.....	214 88	85 95	300 83	do	Do.
554.....	75 52	66 64	142 16	do	Do.
553.....	27 20	24 00	51 20	do	Do.
105 Co.....	12 13	9 95	22 08	July 7, 1881	Do.
2183.....	115 95	77 23	193 18	do	Do.
3085.....	333 35	224 64	557 99	July 8, 1881	G. H. B. White, Cashier.
3038.....	66 67	43 74	110 41	do	Do.
3041.....	142 50	93 38	235 88	do	Do.
3281.....	189 47	90 81	229 78	July 12, 1881	Lewis Johnson & Co.
3279.....	139 47	90 31	229 78	do	Do.
3272.....	132 83	87 52	220 35	do	Do.
3280.....	130 47	90 42	229 89	do	Do.
2795.....	324 64	215 43	540 07	do	Do.
2796.....	203 54	135 07	338 61	do	Do.
1944.....	201 42	144 07	345 49	do	Do.
1827.....	118 81	85 80	204 61	do	Do.
1847.....	58 93	42 09	101 02	do	Do.
1826.....	255 27	179 40	434 67	do	Do.
1947.....	88 71	35 33	124 04	do	Do.
1806.....	118 90	88 05	206 95	do	Do.
1767.....	93 85	64 93	158 78	do	Do.
1746.....	233 91	161 79	395 70	do	Do.
1727.....	129 65		129 65	do	Do.
1724.....	199 00	136 92	335 92	do	Do.
1649.....	271 50	31 52	303 02	do	Do.
1745.....	214 91	148 65	363 56	do	Do.
1486.....	363 75	313 23	676 98	do	Do.
76 Co.....	296 42	243 55	539 97	do	Do.
85 Co.....	78 00	64 09	142 09	do	Do.
1487.....	392 43	337 92	730 35	do	Do.
1629.....	259 41	41 43	300 84	do	Do.
1630.....	259 41	41 43	300 84	do	Do.
3178.....	166 03	63 48	229 51	do	Do.
1696.....	105 87	72 58	178 45	do	Do.
1877.....	108 32	79 74	188 06	do	Do.
552.....	70 18	62 36	132 54	July 20, 1881	Do.
551.....	34 12	30 33	64 45	do	Do.
89.....	83 51	73 39	156 90	do	Do.
88.....	352 77	310 04	662 81	do	Do.
1215.....	154 23	133 75	287 98	do	Do.
1244.....	111 90	96 85	208 75	do	Do.
1264.....	154 57	133 79	288 36	Sept. 2, 1881	Do.
1962.....	134 34		134 34	Aug. 6, 1881	S. J. Block.
3174.....	149 44	122 12	271 56	Sept. 6, 1881	Lewis Johnson & Co.
3153.....	126 43	102 23	228 66	do	Do.
3152.....	126 43	98 28	224 71	do	Do.
3133.....	132 83	105 19	238 02	do	Do.
3132.....	132 83	105 53	238 36	do	Do.
2688.....	194 54	129 42	323 96	do	Do.
1958.....	19 92	15 03	34 95	do	Do.
1948.....	92 82	74 13	166 95	do	Do.
1906.....	80 56	65 36	145 92	do	Do.
1756.....	91 64	72 06	163 70	do	Do.
1665.....	341 48	67 51	408 99	do	Do.
1579.....	251 15	45 56	296 71	do	Do.
1570.....	131 50	113 06	244 56	do	Do.
1516.....	153 47	105 30	258 77	do	Do.

APPENDIX 9.—*Payments made by this division on account of lien certificates, &c.*—Continued.

No. of lien certificate.	Principal.	Interest.	Total.	Date of payment.	To whom paid.
231.....	\$110 13	\$87 42	\$197 55	Sept. 6, 1881	Lewis Johnson & Co.
92 Co.....	108 17	83 41	191 58	Sept. 7, 1881.	Do.
83 Co.....	84 64	65 27	149 91	do.....	Do.
74 Co.....	30 94	23 09	54 03	do.....	Do.
59 Co.....	23 77	18 38	42 15	do.....	Do.
38 Co.....	218 23	172 58	390 81	do.....	Do.
14 Co.....	78 61	50 79	129 40	do.....	Do.
4 Co.....	4 91	3 99	8 90	do.....	Do.
1433.....	162 44	77 23	179 67	Sept. 8, 1881	Do.
1456.....	99 43	67 21	166 64	do.....	Do.
1567.....	33 70	25 71	59 41	do.....	Do.
1567.....	16 84	14 26	31 10	do.....	Do.
1639.....	58 52	38 76	97 28	do.....	Do.
1640.....	253 91	27 98	281 84	do.....	Do.
1662.....	8 11	1 14	4 25	do.....	Do.
1663.....	15 51	6 20	21 71	do.....	Do.
1667.....	23 45	15 06	38 51	do.....	Do.
3668.....	31 62	24 29	55 91	do.....	Do.
1726.....	311 95	172 00	483 95	do.....	Do.
2038.....	97 17	.....	97 17	Sept. 13, 1881	R. W. Rockett.
2039.....	113 62	.....	113 62	do.....	Do.
2131.....	123 93	.....	123 93	Sept. 14, 1881	S. J. Block.
1659.....	295 02	89 00	384 02	Sept. 15, 1881	Lewis Johnson & Co.
60 Co.....	32 62	24 16	56 78	do.....	Do.
60 Co.....	114 79	97 69	202 32	do.....	Do.
1657.....	177 01	53 99	221 00	Sept. 28, 1881	Do.
1485.....	363 75	321 21	684 96	do.....	Do.
1483.....	633 67	559 56	1,193 23	do.....	Do.
1484.....	392 43	346 54	738 97	do.....	Do.
44 Co.....	48 48	41 09	89 48	Sept. 29, 1881	Fitch, Fox & Brown.
1861.....	183 44	.....	183 44	Oct. 4, 1881	S. J. Block.
975.....	138 14	123 29	261 43	Oct. 10, 1881	Lewis Johnson & Co.
	63, 606 74	36, 587 78	100, 146 52		

The above statement is a correct transcript from the cash-book and ledger under my charge.

ROGER WILLIAMS,

Bookkeeper, Special Assistant Division.

Oct. 10, 1881.

Y.—REPORT OF THE SUPERINTENDENT OF PROPERTY.

OFFICE OF SUPERINTENDENT PROPERTY, D. C.,
Washington, November 1, 1881.

SIR: I have the honor to transmit herewith the report of the Superintendent of Property, for the fiscal year ending June 30, 1881.

Very respectfully,

JOHN B. CLARK,
Superintendent of Property.Maj. WM. J. TWINING,
United States Engineers, Commissioner D. C.

CLASS 1.—Stationery.

Total amount purchased, as per invoices and vouchers..... \$9, 678 62

Issued as follows to—

Commissioners' department.....	916 87
Engineer department.....	983 36
Water registrar.....	454 64
Auditor and comptroller.....	265 71

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Treasurer and assessor	\$237
Collector's office	653
Attorney's office	79
Coroner's office	13
Public schools	4, 086
Fire department	150
Police court	148
Washington Asylum	114
Metropolitan police	867
Health office	499
Fire-alarm telegraph	12
Special assessment division	40
Inspector of buildings	26
Liquor-license board	36
Register of wills	78
Markets	11

9, 678

CLASS 2.—Blank forms and printing.

Total amount purchased, as per invoices and vouchers..... \$9, 446

Issued as follows to—

Commissioner's department	786
Engineer department	557
Water registrar	224
Auditor and comptroller	120
Treasurer and assessor	261
Special assessment division	88
Collector's office	2, 803
Attorney's office	152
Liquor-license board	101
Inspector of buildings	31
Public schools	3, 371
Fire department	64
Police court	70
Washington Asylum	27
Health office	676
Metropolitan police	100
Coroner's office	4
Markets	1

9, 446

CLASS 3.—School-books.

Total amount purchased, as per invoices and vouchers..... \$4, 618

Issued as follows to—

Public schools	4, 616
Health office	1
Metropolitan police	

4, 618

CLASS 4.—Furniture.

Total amount purchased, as per invoices and vouchers..... \$9, 925

Issued as follows to—

Commissioners' office	135
Engineer department	34
Water registrar	107
Auditor and comptroller	3
Treasurer and assessor	54
Collector's office	96
Public schools	2, 124
Fire department	435
Police court	109
Washington Asylum	272
Metropolitan police	520
Health office	30

9, 925

CLASS 5.—*Hardware.*

Total amount purchased, as per invoices and vouchers.....	\$5,031 79
Issued as follows to—	
Commissioners' office.....	95 38
Engineer department.....	1,031 07
Water department.....	193 63
Public schools.....	1,041 92
Fire department.....	829 51
Police court.....	17 58
Washington Asylum.....	790 26
Metropolitan police department.....	393 33
Health department.....	25 35
Parking commission.....	557 05
Markets.....	56 71
	<hr/> 5,031 79

CLASS 6.—*Stoves, tinware, and heating apparatus.*

Total amount purchased, as per invoices and vouchers.....	\$4,380 10
Issued as follows to—	
Commissioners' office.....	279 78
Engineer department.....	1,333 71
Water department.....	20 00
Public schools.....	1,284 66
Fire department.....	560 80
Police court.....	67 32
Washington Asylum.....	549 32
Metropolitan police department.....	246 77
Health department.....	37 74
	<hr/> 4,380 10

CLASS 7.—*Plumbers' supplies, iron pipe and castings.*

Total amount purchased, as per invoices and vouchers.....	\$13,367 84
Issued as follows to—	
Commissioners' office.....	2 52
Engineer department.....	178 53
Water department.....	12,046 73
Public schools.....	369 76
Fire department.....	529 08
Washington Asylum.....	219 17
Health department.....	3 25
Fire-alarm telegraph.....	18 50
	<hr/> 13,367 84

CLASS 8.—*Groceries and provisions.*

Total amount purchased, as per invoices and vouchers.....	\$9,250 45
Issued as follows to—	
Commissioners' office.....	60 13
Engineer department.....	23 20
Water department.....	4 50
Auditor and comptroller.....	1 25
Attorney.....	1 25
Public schools.....	50 64
Fire department.....	113 49
Police court.....	3 00
Washington Asylum.....	7,961 93
Metropolitan police department.....	864 99
Health department.....	8 98
Industrial Home School.....	257 09
	<hr/> 9,250 45

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CLASS 9.—*Dry goods, clothing, and notions.*

Total amount purchased, as per invoices and vouchers..... \$3,014

Issued as follows to—

Commissioners' office	44
Treasurer and assessor	
Public schools	55
Fire department	165
Washington Asylum	2,647
Metropolitan police	68
Health department	4
Conveyance of prisoners	2
Industrial Home School	26

3,014

CLASS 10.—*Boots and shoes.*

Total amount purchased, as per invoices and vouchers..... \$641

Issued as follows to—

Engineer department	87
Commissioners' office	2
Washington Asylum	552

641

CLASS 11.—*Saddlery.*

Total amount purchased, as per invoices and vouchers..... \$6,616

Issued as follows to—

Commissioners' office	76
Water department	209
Engineer department	142
Fire department	4,846
Metropolitan police	50
Washington Asylum	143
Treasurer and assessor	39
Parking commission	997
Health department	68
Conveyance of prisoners	19
Inspector of buildings	23

6,616

CLASS 12.—*Drugs and chemicals.*

Total amount purchased, as per invoices and vouchers..... \$3,795

Issued as follows to—

Commissioners' office	7
Engineer department	543
Water department	619
Auditor and comptroller	
Parking commission	1
Public schools	7
Fire department	1,007
Police department	33
Washington Asylum	1,562
Health department	20

3,795

CLASS 13.—*Glass, paints, and varnish.*

Total amount purchased, as per invoices and vouchers..... \$733

Issued as follows to—

Commissioners' office	18
Engineer department	6
Water department	43

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Public schools.....	\$226 08
Fire department.....	213 67
Washington Asylum.....	127 34
Metropolitan police department.....	11 85
Health department.....	2 39
Inspector of buildings.....	83 32

733 43

CLASS 14.—Lumber and building material.

Total amount purchased, as per invoices and vouchers	\$8,466 74
--	------------

Issued as follows to—

Commissioners' office.....	85
Engineer department.....	2,341 27
Water department.....	298 40
Public schools.....	537 25
Fire department.....	298 79
Washington Asylum.....	895 40
Police department.....	26 73
Health department.....	2 76
Parking commission.....	3,938 39
Markets.....	126 90

8,466 74

CLASS 15.—Forage.

Total amount purchased as per invoices and vouchers.....	\$9,619 32
--	------------

Issued as follows to—

Engineer department.....	605 29
Water department.....	419 68
Treasurer and assessor.....	116 66
Collector.....	35 10
Inspector of buildings.....	161 19
Parking commission.....	72 49
Police department.....	150 72
Fire department.....	4,559 38
Conveyance of prisoners.....	777 90
Washington Asylum.....	2,269 29
Health department.....	451 62

9,619 32

CLASS 16.—Fresh and salt meats.

Total amount purchased, as per invoices and vouchers.....	\$4,579 81
---	------------

Issued as follows to—

Industrial Home School.....	13 31
Washington Asylum.....	4,566 50

4,579 81

CLASS 17.—Ice.

Total amount purchased, as per invoices and vouchers.....	\$1,148 24
---	------------

Issued as follows to—

Commissioners' office.....	312 32
Engineer department.....	20 52
Attorney.....	9 10
Health department.....	34 80
Public schools.....	28 40
Fire department.....	304 92
Police court.....	53 42
Washington Asylum.....	142 48
Police department.....	239 28

1,148 24

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CLASS 18.—*Lamp-posts and miscellaneous castings.*

Total amount purchased, as per invoices and vouchers..... \$2,299

Issued as follows to—

Engineer department.....	2,144
Water department.....	77
Public schools.....	77

2,299

CLASS 19.—*Fuel.*

Total amount purchased, as per invoices and vouchers..... \$24,745

Issued as follows to—

Engineer department.....	59
Commissioners' office.....	139
Water department.....	7,121
Parking commission.....	12
Fire-alarm telegraph office.....	10
Attorney.....	43
District offices.....	386
Fire department.....	962
Police court.....	213
Police department.....	1,274
Washington Asylum.....	2,245
Markets.....	45
Health department.....	180
Public schools.....	12,052

24,745

CLASS 20.—*Construction material.*

Amount on hand per last report, July 1, 1880..... \$26,505

Amount purchased to June 30, 1881..... 115,323

Total to be accounted for..... 141,829

Issued to the engineer department..... 113,946

Balance remaining on hand..... 27,883

Total to be accounted for..... 141,829

CLASS 21.—*Miscellaneous supplies, expenses and repairs.*

Commissioner's department:

For livery.....	\$413 00
For carpentering and repairs.....	249 29
For labor.....	382 00
For drayage.....	18 00
For gas fixtures.....	4 09
For plumbing.....	89 60
For whitewashing and polishing.....	53 25
For book binding.....	120 95
For repairs to vehicles.....	454 50
For rent of telephone instruments.....	80 50
For washing towels.....	213 64
For blacksmithing.....	54 63
For cleaning carpets.....	27 72
For papering.....	47 03
For pasturage.....	76 00
For one gray horse.....	200 00
For one bay horse.....	160 00
For putting up and repairing awnings.....	133 20
For rent of property yard.....	300 00
For gas governors.....	200 00
For veterinary services.....	70 82
For miscellaneous items.....	77 85

\$2,296

Water registrar:

For photolithographing	\$160 00
For carpentering and repairs	22 81
For one set machinists' tools	54 00
For repairing machinery	65 00
For timber for pumps	187 20
For one bay mare	140 00
For binding books	71 00
For miscellaneous	26 50

\$726 51

Engineer:

For livery	482 48
For one bay horse	175 00
For one bateau	13 00
For veterinary services	12 35
For blacksmithing	209 41
For repairs to vehicles	72 75
For repairs to steam roller	65 03
For hire of wagon	82 20
For tents	55 00
For granite roller	50 00
For stone wheelbarrows	30 00
For iron road-rollers	225 00
For chains and castings for testing machine	131 44
For maps of Washington	20 00
For leveling-rod	18 00
For repairs to instruments	76 45
For rent of telephone instruments	80 60
For box of water-colors	13 50
For hire of carts hauling stone	15 81
For repairing hay-scales	10 00
For hauling, counting, and piling trap-rock blocks	134 93
For photolithographing	25 00
For miscellaneous items	88 34

2,086 29

Public schools:

For setting school furniture	325 75
For regulator	169 00
For hauling school furniture	115 75
For rent of telephone instruments	643 00
For gas fixtures	54 75
For furnishing and putting up air-clock	262 00
For pneumatic clocks	350 00
For grindstone	5 50
For repairing clock	4 75
For making umbrella rack	25 00
For bookbinding	14 25
For school-bells	120 00
For improving grounds	32 80
For miscellaneous	2 00

2,124 55

Fire department:

For repairs to apparatus	117 25
For veterinary services	229 02
For plumbing	43 30
For gas fixtures	87 32
For hauling ashes	17 80
For rent of telephone instruments	262 50
For swinging harness	420 00
For fire extinguishers and charges	97 50
For one bay horse	160 00
For dies for hose threads	38 00
For cleaning carpets	12 40
For repairing roof	15 00
For patent door bolts	35 00
For heaters and play pipes	992 72
For miscellaneous	73 00

2,600 81

Police court:

For carpentering and repairs	\$35 95
For hanging awnings	3 65
For rent of telephone instruments	87 00
For plumbing	33 50
For locksmithing	3 50
For papering and kalsomining	30 25
For hauling ashes	4 00

Police department:

For blacksmithing	41 25
For plumbing	197 05
For gas fixtures	2 10
For carpentering	18 45
For numbers	70 00
For balance on exchange of horse	65 00
For insect extract	12 00
For rent of telephone instruments	321 27
For awnings	15 00
For stamps	15 00
For repairing chairs	7 25
For repairing clock	1 50
For hanging sign	2 50
For hauling ashes	1 50
For repairs to ambulance	81 50
For repairs to van	3 50
For hire of ambulance	29 00
For bookbinding	62 50
For locksmithing	75

Washington Asylum:

For blacksmithing	12 76
For platform scale and seeds	205 30
For rent of telephone instruments	46 00
For clock	7 50
For repairs to vehicles	10 00
For carts	153 00
For exchange of old carriage for new	300 00
For glassware and crockery	80 38
For repairing clocks	11 00
For locksmithing	5 00
For tent-fly	12 00
For sleigh	40 00
For borax soap stock	40 00
For miscellaneous	8 20

Fire-alarm:

For plumbing	28 25
For rent of telephone instrument	5 60
For sewer-pipe	3 00

Collector:

For dog-tags	112 50
For whitewashing	5 00
For plumbing and gas-fitting	52 79
For carpentering and repairs	13 80
For blacksmithing	6 50
For stamp	23 00
For repairing stamps	19 00

Health Office:

For dies and stamps	45 00
For carpentering and repairs	44 20
For plumbing	21 00
For one horse	150 00
For hanging awnings	7 60
For rent of telephone instruments	114 22
For blacksmithing	83 62
For repairs to vehicles	308 30

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 357

Health Office—Continued.

For repairs to clocks	\$3 00	
For bookbinding	9 50	
For miscellaneous	15 50	
		\$801 94

Treasurer and assessor :

For carpentering and repairs	\$57 00	
For blacksmithing	14 63	
For wagon	135 00	
For bookbinding	130 50	
For bookbinding material	48 45	
For repairs to wagon	22 25	
For hire of horse	121 00	
For one bay horse	150 00	
		\$678 83

Parking commission :

For tree boxes and stakes	1,207 50	
For hauling tree boxes	29 37	
For agricultural implements	14 70	
For repairs to wagon	39 75	
For trees	44 80	
For labor	13 37	
For grass seed	1 50	
For soil	65 10	
For blacksmithing	84 41	
For one roan horse	150 00	
		1,650 50

Inspector of buildings :

For blacksmithing	19 63	
For repairs to wagon	32 95	
		52 58

Auditor and comptroller :

For bookbinding	54 20	
For carpentering and repairing	14 23	
For calcimining	10 00	
		78 43

Special assessment division :

For stamp	8 00	
For self-inker	16 00	
		24 00

Coroner :

For set of post-mortem instruments	12 00	
For rent of telephone instruments	46 00	
		58 00

Attorney :

For rent of telephone instruments	46 00	
Conveyance of prisoners :		

For blacksmithing	88 29	
For pasturage	6 00	
For repairs to van	205 25	
		299 54

Markets :

For gas fixtures and burners	11 25	
For plumbing	14 60	
		25 85

Liquor license board :

For self-inker and dates	10 00	
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Total for miscellaneous supplies, expenses and repairs.. 16,835 45

Total for the year ending June 30, 1881..... 263,518 90

JOHN B. CLARK,
Superintendent of Property.

Z—REPORT OF THE HEALTH OFFICER.

OFFICERS OF THE HEALTH DEPARTMENT.

HEALTH OFFICER.

Smith Townshend, M. D.

CHIEF CLERK.

J. C. McGinn.

ASSISTANT CLERKS.

John N. Dickson.
Will A. Short.

W. B. Jones.
A. J. Marsh.

T. W. Parsons.

SANITARY INSPECTORS.

A. J. Heird.
Jas. McV. Mackall, M. D.
R. M. Barr.

Thomas M. Shepherd.
Theo. Mead, M. D.
C. C. Simms.

INSPECTOR OF PLUMBING.

Samuel A. Robinson.

FOOD INSPECTORS.

George P. Bohrer.

Caleb Sebastian.*

Wm. J. Cooke.

INSPECTOR OF MARINE PRODUCTS.

Gwynn Harris.

POUND MASTER.

Samuel Einstein.

MESSENGER.

P. H. Godwin.

PHYSICIANS TO THE POOR.

J. W. Little, M. D.
Henry Darling, M. D.
H. Suter, M. D.
H. M. Newman, M. D.
J. Walter, M. D.

B. M. Beall, M. D.
A. E. Johnson, M. D.
H. E. Leach, M. D.
A. A. Marsteller, M. D.
D. B. Street, M. D.

W. P. C. Hazen, M. D.

* Detailed from Metropolitan police force.

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REPORT.

I have the honor to present herewith statements in detail covering the operations of this department for the fiscal year ending June 30, 1881. I trust that these statements may give evidence of substantial progress in the right direction. Our labors in this branch of the public service have been put forth in an earnest energetic effort to accomplish all possible good for the District of Columbia, and it affords me much pleasure to be able to say that our showing as to healthfulness is even better than that of last year. Seventy-one less deaths occurred during the year ending June 30, 1881, than during the year preceding. The total number of deaths occurring was 4,136, of which number 2,206 were of white persons, and 1,931 of colored persons, showing a death-rate of 18.18 per 1,000 per annum for the white, 31.27 for the colored, and 22.60 for the total population. Of the decedents 1,678 were children under five years of age, while 707 were persons 60 years of age and over.

There were 3,595 births, 812 marriages, and 363 still-births reported. The following tabular statement gives, in a condensed form, the deaths by class, sex, and color, with percentages and death-rates:

Deaths by classes, arranged according to sex and color, with percentages and annual death-rate for year ending June 30, 1881.

Classes.	Deaths.							Percentages to total deaths by color and sex.				Annual death-rate.		
	White.		Colored.				Total.	White.		Colored.		White.	Colored.	Total.
	Male.	Female.	Male.	Female.	White.	Colored.		Male.	Female.	Male.	Female.			
Zymotic diseases	292	248	181	186	540	367	907	24.75	24.17	19.65	18.41	4.50	6.12	5.04
Constitutional diseases	274	269	225	812	543	537	1,080	23.24	23.16	24.43	30.89	4.52	8.95	6.00
Local diseases	461	334	392	363	795	755	1,550	39.10	32.55	42.56	35.94	6.63	12.58	8.61
Developmental diseases	99	144	85	125	243	210	453	8.40	14.04	9.23	12.88	2.02	3.50	2.52
Violence	53	31	38	24	84	82	146	4.50	3.02	4.13	2.88	.70	1.03	.81
Total deaths	1,179	1,026	921	1,010	2,051	1,981	4,136					18.40	32.2	22.98

Mean annual death-rate from September 1, 1874, to June 30, 1881 ... { White 18.20
 { Colored 31.27
 { Total 22.60

Mean barometer for year, 30.07 inches; mean temperature, 53.2°; mean percentage of humidity, 70.6; total amount of rainfall, 43.56 inches.

Again we have been blessed with freedom from disease in epidemic form, while some of the cities around us have been scourged with small-pox, diphtheria, scarlet fever, &c.

The following is a brief statement of work performed in the various branches of the department:

There were 20,071 nuisances reported and abated; 31,902 pounds of meat, 13,491 bushels of fruit and vegetables, 142,554 pounds of fish, and 10,186 bushels of oysters condemned as unfit for food; examinations and reports made on 1,882 citizens' complaints; orders issued for burial at public expense in 563 cases; examinations made to ascertain local cause of disease in 124 cases; 1,193 official letters written; 2,341 official notices issued; 67 cases referred to the attorney for prosecution under the health ordinances; 3,651 animals impounded; 2,805 dogs killed; 5,957 dead animals, 10,560 tons of garbage, and 15,881 barrels of night soil removed; 150 deaths referred to the coroner for investigation; 4,775 permits for burial issued; the regular monthly reports compiled and sent out, and the office work conducted.

WASHINGTON MALARIA.

In the health department, probably more so than in any other branch of the public service of the District government, are we compelled to delay the commentary portion of our report; the tabular work requisite to intelligently illustrate the statistics relating to births, marriages and deaths, and render them of some value to the statistician, is necessarily extensive, and covers some time after the expiration of the year which the report includes. During the time of preparation questions may arise in the public mind which demand prompt consideration, and which it may be well to answer or discuss promptly. As the period intervening between the date properly covering this report, and that at which it is being prepared for the public hands, was a period during which more than ordinary interest centered upon us, I think I may be pardoned if I enter into a little explanation coupled with a comparison relative to the healthfulness of ours and other cities during the past few historic weeks.

Washington, its ins and outs, its uprising and its down sitting, its every fluctuation and its every change, is usually heralded to the world; but the events of the memorable months of July, August, and September, 1881, have made it during that time, more than ever, a cynosure for all eyes and a subject for every critic. We have been discussed in latitude, longitude, meteorology, topography, and climate. Our atmosphere has been descanted upon by many who were as fully acquainted with their subject as they were with the surface of the earth surrounding the north pole. Our sewerage and drainage has been discussed privately and con by others just as well informed. The mirror has been held up to an imaginary Roman Campagna, or black hole of Calcutta, and Washington and the District of Columbia pictured as the reflection. I would be useless of course for me to attempt a description of the condition of the public mind which influenced, called for, or tolerated, such senseless, unfounded, and yet startling, vaporings as were heralded forth regarding the sanitary condition of our cities. A prominent New York divine, influenced no doubt by the daily press reports, spoke from his pulpit in ominous tones of "the pestilential atmosphere surrounding the abiding place of our Chief Magistrate." Indeed, I wonder that the atrocious crime of July the 2d has not itself been charged up to the account of "Washington malaria." Malaria has been a fruitful theme. It has furnished columns upon columns to the daily and weekly press, giving work to numerous typos, startling reading matter to the general public, and has oftentimes proven a very convenient shelter for the puzzled doctor. I think that most of the "ills which human flesh is heir to" have at some time found cover beneath its seven letters. The attempt

definitions of the term "malaria" are rather vague and unsatisfactory, and the manner in which it moves and the dire results which follow are equally strange and unaccountable. Malaria is the cause of many ills in many forms here in the District, or at least it is so accredited. True, many of the same conditions arising from "malaria" *here*, result from entirely different causes in other sections of the country.

When our lamented President had been on his bed of suffering for several days, and his attendants, earnest and eager in his behalf, unmindful of themselves, had been, night and day, watching and waiting by his side, "malaria" stepped in and took hold of them, one by one—something it had never done before.

One of our authorities, in attempting to define or describe malaria, says: "It is proved by the experience of all ages that there is an intimate connection between marshy districts and certain diseases, especially the various forms of intermittent and remittent fever; but the exact nature of the noxious agent and the circumstances upon which its formation and extrication depend are, even at the present day, not altogether established. It is clearly neither heat nor moisture, for the crews of clean ships, when cruising in the tropics, at a distance from the land, are usually very healthy; nor is it any known gas extricated from the marsh, for the gases collected by stirring up marshes (carbonic acid, nitrogen, oxygen, and carburetted hydrogen) may be inspired without giving rise to any of the symptoms resembling those produced by malaria. It may be regarded as an established fact that the noxious agent is a product of vegetable decomposition *accruing under certain conditions of heat and moisture.*"

The "certain conditions" under which it takes hold of its victims are as mysterious and unaccountable as those under which it is produced.

If one of the President's attendants had been taken sick at Elberon it would probably have been from some disease other than malaria. No other would have dared try to usurp malaria's rights at the White House; malaria has a monopoly here. Dyspepsia has been termed our "national disease." Malaria may be said to have attained a widespread reputation as our national capital disease. If a man stepped upon an orange peel upon one of our pavements, and, slipping down, sustained a fracture of some limb, there are those who, two weeks later, would go to work to demonstrate to you the effect of malaria as a prime factor in that man's case and condition. When an excuse is wanted for any abnormal condition of the human system, malaria comes up as naturally as quinine is taken down. It has really become fashionable. No one thinks of suffering from anything other than malaria. Now, it is not my intention or desire to attempt a denial that the conditions attendant upon what is supposed to be a malarious atmosphere exist to a certain extent in certain portions of the District of Columbia, but what I do want to assert and proclaim is the fact that that prominence and sensational coloring given to everything coming from the national capital during the late exciting period has given undue prominence to this question of Washington malaria and done gross injustice to the healthfulness of our climate.

It is generally accepted as a fact that the malaria which does exist in our cities arises from the flats or marshes on our river front; and I think all are persuaded of the necessity which demands action, looking to the eradication of this evil from our midst. At the same time, we know full well, in the light of present knowledge, that what are known as the malarial diseases depend not alone upon the miasma from marshes for their origin. They are found to exist in locations far re-

moved from any such influence. Filthy streets and foul gutters in a city; the saturation of the soil about dwellings; the foul air from damp, unventilated cellars; the accumulated filth from domestic animals; the defective drainage of houses; to all these sources have been traced the responsibility for just such an effect upon the human system as is accredited to the malaria of the marshes. Zymotic diseases are those which the best of authority teach us are dependent upon an impure air. They might be termed filth diseases. Filth of some kind, whether it be the decayed vegetable matter on a marsh, the decayed cabbage in a country cellar, or the decaying remains of a domestic animal on a city street, either render the air impure; and the impurities taken into the lungs poison the blood and produce disease.

Now, the principal disease attendant upon the breathing of an air rendered impure from any of the causes named are diarrhoeal diseases, typhoid fever, malarial fevers, scarlet fever, diphtheria, and small-pox. Below is given a list of fourteen of our prominent cities, with a comparative statement, showing the deaths occurring in each from the diseases above referred to, the percentage of same to the total deaths, and the annual death-rate therefrom for the very period when such a howl was made about Washington malaria, viz, from the middle of June to the middle of September, 1881.

The figures are those given by the authorities of the cities named, and are assumed to be correct.

Comparative statement showing deaths from principal zymotic diseases in the fourteen cities named during the thirteen weeks ending September 17, 1881.

Cities.	Population.	Total deaths.	Annual death-rate for total deaths.	* Deaths from the principal zymotic diseases.	Percentage of these zymotic diseases to total deaths.	Annual death-rate from these zymotic diseases.
New York.....	1,206,577	10,952	36.31	4,383	40.02	14.53
Philadelphia.....	846,980	5,169	24.41	1,021	19.75	4.83
Brooklyn.....	569,689	4,387	30.96	1,709	38.93	12.04
Boston.....	362,535	2,283	25.19	763	33.42	8.41
Saint Louis.....	350,522	2,718	31.02	835	30.72	9.53
Baltimore.....	332,190	2,681	32.28	920	34.32	11.08
Cincinnati.....	255,708	2,233	34.93	550	23.00	8.74
New Orleans.....	216,140	1,554	28.78	419	26.96	7.70
† Hudson County, New Jersey.....	187,830	1,474	31.56	461	31.28	9.88
District of Columbia.....	180,000	1,296	28.69	460	35.50	10.22
Pittsburgh.....	156,381	1,896	35.70	675	45.42	16.23
Milwaukee.....	115,578	808	27.97	242	30.00	8.37
Providence.....	104,857	571	21.80	159	27.85	6.07
Charleston.....	50,000	542	43.36	125	23.09	10.00
Totals and means.....	4,932,107	38,064	30.87	12,691	33.34	10.22

* Diarrhoeal diseases, typhoid fever, malarial fevers, scarlet fever, diphtheria, and small-pox.

† Jersey City.

It will be seen by an examination of the above that we stand fifth highest in our showing of the annual death-rate from the principal zymotic diseases for the period named. Those cities which show a higher death-rate are Pittsburgh, New York, Brooklyn, and Baltimore. Saint Louis and Jersey City are each less than one in one thousand, and Boston, Cincinnati, and Milwaukee each less than two in one thousand below us, while the mean annual rate for the whole taken together stands seven-hundredths above the rate shown for our cities. In other

words, the 180,000 population of the District of Columbia during the time covered in this statement lost 1,296 of its number, or an annual death-rate of 10.22 per 1,000, while the 4,932,107 population of the communities named lost 38,064, or at the rate of 10.29 per 1,000 per annum. These figures speak for themselves, and demonstrate very clearly that what is accomplished by "Washington malaria" here, is rendered possible by different agencies in other localities.

We have no reeking streets and foul gutters; our surface soil and sub-soil is generally well drained; our dwellings are as a rule well drained and properly ventilated, and we guard against accumulations of filth.

There is no city in this country where the health authorities are held to such strict account and so much expected of them, and there is none where so much has been accomplished by sanitary reform. With the Potomac flats nuisance removed from our doors, we would stand *par excellence* the most healthful as well as the most beautiful city in the world.

THE INSPECTION OF PLUMBING.

House drainage and plumbing work are subjects to which considerable attention has been given in the pages of my former reports, and I think I may be pardoned when I say that what has at last been accomplished is a matter upon which the people of this District are to be sincerely congratulated. Early in my experience as health officer I began to appreciate the necessity for applying some remedy to the evils which were constantly appearing as a result of defectively constructed sewers and "scamped" plumbing work. In my report for the year 1878 I called attention to the subject under the head of "sewer gases in dwellings," as one worthy of and demanding special attention. I said then:

There should be employed, under direction of the health officer, a competent person whose duty it should be to inspect all houses in course of erection and investigate the construction and arrangement of the sewers, sewer traps, waste and drain pipes.

It should be necessary to have a certificate as to the correctness of the sewers, sewer traps, and drain pipes ere the property could be inhabited, and any person failing to do plumbing work properly, whereby noxious gases might enter premises, should be liable to fine.

I urged that the attention of Congress be called to the matter, and in the winter of 1878 had a bill "authorizing the employment of an inspector of plumbing in and for the District of Columbia, and for other purposes" framed and presented.

The necessity for such legislation was made apparent to the members of the House Committee on the District of Columbia, and they reported the bill favorably. It passed the House of Representatives in the early part of 1879, but action could not be secured in the Senate at that session of Congress. In my report for 1879 I dwelt at length upon the subject of "house drainage, sewer gas, and defective plumbing," and tried to give, in the most forcible manner possible, the reasons why there should be no further delay in making and enforcing laws covering the subject. The passage of the bill by the Senate was finally secured, but it was slightly amended, which, of course, sent it back to the House, where, owing to a press of other business, it was left untouched upon the Speaker's table. Laborers in a good cause should not be discouraged, however, and at the last session of Congress it was again presented and finally passed. On January 25, 1881, it received the ap-

proval of the President and became a law. The text of the bill was as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be appointed by the Commissioners of the District of Columbia an inspector of plumbing for said District, whose duty it shall be to inspect all houses in course of erection, and pass upon the plumbing and sewerage of said houses. And the health officer of the District of Columbia is hereby authorized, under direction of the Commissioners, to execute and enforce regulations governing plumbing, house drainage, and the ventilation of house sewers; and any person who shall neglect or refuse to comply with the requirements of the said regulations when promulgated, shall be punished by a fine of from twenty-five to two hundred dollars for each and every such offense, or in default of payment of fine to imprisonment for thirty days.

The duty imposed upon the health officer of executing and enforcing regulations was no light task, but it was entered upon as earnestly as the previous work in the same direction had been pursued. After careful study of the theories of some of our best known authorities on plumbing, sanitary engineering, &c., and comparison with what our own experience taught us must prove necessary in this District, an outline of regulations was framed. A copy of this outline was sent to each of our leading authorities on the subject in this country, and one to each of the plumbers in this District.

To them I frankly stated that as we were among the pioneers in this sort of work in this country, and, indeed, as very little had been done in the same direction anywhere, we had not the experience of others to guide us, and consequently must rely, to a great extent, upon the practical experience of practical men in getting an insight into what might be required to secure the proper performance of such work. That it was the earnest desire of the health officer to do nothing which would work unnecessary hardship to the plumbers, and to leave nothing undone which would tend to promote the health and protect the lives of the people of this District.

I asked that they look them over carefully, and that they point out anything which might be considered a defect.

In response I received much valuable information and advice, and through this channel desire to return thanks to Col. George E. Waring, James C. Bayles, Charles F. Wingate, Henry C. Meyer, Dr. J. S. Billings, many of the plumbers of this city, and others. The city plumbers were requested to meet and confer with the health officials, and they responded promptly. The provisions of the regulations were, as a rule, satisfactory to those whom they were intended to control, and the few points which met with objection the plumbers were asked to confer among themselves upon and suggest such change as, in their opinion, justice demanded.

Thus the first code of regulations governing plumbing and house drainage in vogue in this country was prepared and adopted as follows:

REGULATIONS GOVERNING PLUMBING HOUSE DRAINAGE AND THE VENTILATION OF HOUSE SEWERS IN THE DISTRICT OF COLUMBIA.

ACT authorizing the employment of an inspector of plumbing in and for the District of Columbia, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be appointed by the Commissioners of the District of Columbia an inspector of plumbing for said District, whose duty it shall be to inspect all houses in course of erection, and pass upon the plumbing and sewerage of said houses. And the health officer of the District of Columbia is hereby authorized, under the direction of the Commissioners, to execute and enforce regulations governing plumbing, house drainage, and the ventilation of house sewers; and any person who shall neglect or refuse to comply with the requirements of the said regulations when promulgated, shall be punished by a fine of from twenty-five to two hundred dollars for each and every such offense, or in default of payment of fine to imprisonment for thirty days.

tions governing plumbing, house drainage, and the ventilation of house sewers; and any person who shall neglect or refuse to comply with the requirements of the said regulations, when promulgated, shall be punishable by a fine of from twenty-five to two hundred dollars for each and every such offense, or in default of payment of fine to imprisonment for thirty days.

Approved, January 25, 1881.

In accordance with the foregoing act of Congress, and in pursuance of authority thereby conferred, the following regulations are made and promulgated for the information and guidance of all concerned:

SECTION 1. These regulations governing plumbing, house drainage, and the ventilation of house sewers shall take effect and be in force in the District of Columbia from and after August 1, 1881, and all work of the character named, thereafter placed in or upon any structure in the said District, shall be done in accordance with the provisions of the same. Regulations to take effect.

SEC. 2. 1. It shall be the duty of the inspector of plumbing, under direction of the health officer, to sign and issue all notices and certificates, to keep a daily record of his work, including all notices and applications received, violations of these regulations, and all other matters which may pertain thereto; to make daily, weekly, and quarterly reports, and an annual report of his operations to the health officer. Duties of the inspector of plumbing.

2. He shall inspect all houses in course of erection, alteration, or repair, as often as may be necessary, and shall see that all plumbing, drainage, and sewerage work is done in accordance with the provisions of these regulations. Report to be made.
Houses to be inspected.

3. He shall take and subscribe an oath or affirmation that he will faithfully perform the duties of his office, and shall, before entering upon its duties, execute a bond to the District of Columbia in the sum of five thousand dollars, with three sureties, to be approved by the Commissioners, conditioned upon the faithful performance of the duties of his office and for the benefit of all persons aggrieved by his acts or neglect. Oath to be taken and bond entered into.

SEC. 3. It shall be the duty of every person doing business as a plumber, or engaged in conducting plumbing or house drainage in the District of Columbia, to register his or her name in a book to be provided for that purpose at the health department, giving full name, residence, and place of business, and in case of removal from one place to another in said District to make change in said register accordingly; and it shall be the further duty of every such person to give good and sufficient bond in the sum of five hundred dollars, to be approved by the Commissioners of the District of Columbia, conditioned upon proper performance of their work. Plumbers to be registered.

SEC. 4. Before proceeding to lay or construct any portion of the drainage system of any house, the owner, or his architect or agent, shall file with the health officer, for the inspector of plumbing, a plan thereof showing the said drainage system entire, from its connection with the main sewer to terminus in house, together with the location of all branches, traps, ventilating pipes, &c. The name of the plumber who is to perform the work shall be given on said plan, which must be approved by the inspector of plumbing before any portion of the work shall be executed. Plan of plumbing work to be filed at the Health Department.

SEC. 5. Every soil, drain, or waste pipe above ground shall be of metal. All soil pipes above ground shall be of iron, with leaded or screwed joints, not less than three inches in diameter, and shall be extended full size through roof of house. Material of soil, drain, or waste pipes.

2. No soil or drain pipe shall be laid under the house, unless absolutely unavoidable. When necessary to lay a soil or drain pipe under house, said pipe shall be of iron with leaded joints, or vitrified pipe embedded in a hydraulic concrete base of not less than five inches thickness, and shall be so located as to be readily accessible for inspection. Soil and drain pipes not to be laid under house.

3. All soil, drain, waste, and supply pipes shall be concentrated as much as possible, protected from exposure, and shall be so located as to be readily accessible for inspection. Pipes to be concentrated as much as possible.

4. All safes and refrigerators shall be drained by special pipes terminating out of doors, and not directly connected with the sewer. "Safes" to be drained by special pipes.

- Rain-water leaders not to be used as soil pipes or ventilators. 5. No rain-water leader shall be used either as a soil pipe or as a ventilator for sewer.
- No brick or metal flue to be used as ventilator. 6. No brick, sheet metal, or earthenware flue shall be used as a sewer ventilator.
- Leaders to be of iron when used in connection with drainage system. 7. Rain-water leaders, when used in direct connection with any part of the drainage system of a house, shall be of iron with leaded joints.
- Iron pipes to be painted. 8. All iron, soil, and sewer pipes shall be coated inside and out with coal tar, applied hot, or with some equivalent therefor.
- Weight of pipe to be used. 9. The weight of all iron pipe used shall be not less than:
For six-inch pipe, 20 pounds per lineal foot.
For five-inch pipe, 17 pounds per lineal foot.
For four-inch pipe, 13 pounds per lineal foot.
For three-inch pipe, 9½ pounds per lineal foot.
For two-inch pipe, 5½ pounds per lineal foot.
- Iron pipes to be tested. 10. If deemed necessary, iron pipes before being concealed shall have openings stopped, and shall be filled with water and allowed to stand twenty-four hours for inspection.
- No traps on vertical soil pipes. SEC. 6. 1. No traps shall be placed on or at the foot of vertical soil pipes so as to impede circulation.
- When traps shall be used. 2. All water-closets, sinks, basins, wash-trays, &c., shall have suitable and approved traps placed as near as practicable to said fixtures.
- Trap on main drain. 3. A running trap shall be placed on every main drain at an accessible point.
- Main drain to be ventilated. SEC. 7. 1. Every main drain shall have an inlet for fresh air entering on the house side of trap and carried to such point on the outside of house as may be approved by the inspector.
- Ventilation of traps. 2. Each and every trap shall have a special vent pipe, of iron, extending either above roof of house or into the soil pipe above the highest fixture.
- Size of vent pipes. 3. The vent pipe for each water-closet trap shall be not less than two inches in diameter, and for traps under other fixtures not less than one and one-half inches.
- Manner in which sewers shall be laid. SEC. 8. 1. All underground sewers shall be laid in trenches, cut at a uniform grade, and on either gravel thoroughly rammed or a hydraulic concrete base of four inches thickness.
- Fall prescribed. 2. All sewer pipes shall have a fall of at least one-fourth inch to the foot when practicable.
- Changes in direction and branches. 3. They shall be laid in straight lines. All changes in direction shall be made with curved pipes, and all connections with Y branch pipes and one-eighth bends.
- Connection of lead with iron pipes. 4. All connections of lead with iron pipes shall be made with brass thimbles, full size of iron pipe, caulked into the iron with lead, and plumbers' wiped joints.
- Vaults, sinks, and cess-pools not to be connected with the drainage system. SEC. 9. 1. No vault, sink, cess-pool, or dry well shall be in any way connected with the drainage system of any house.
- Overflow pipes to be trapped. 2. All overflow pipes from tanks and cisterns shall be provided with traps, as required in section six. They shall be disconnected from drainage system and in all cases shall deliver outside the house.
- Strainers to be used. 3. All pipes from sinks, wash-trays, &c., shall be provided with strong metallic strainers.
- Tanks or cisterns to be used when necessary. SEC. 10. 1. Where water supply is not ample for proper flushing of water-closets, &c., the inspector of plumbing may, in his discretion, order the erection of a tank or cistern, into which water may flow at night or into which it may be pumped.
- Supply for domestic purposes not to be drawn from tank or cistern. 2. Cisterns or tanks, erected for purposes described in the foregoing paragraph, shall not have an overflow pipe connected with any drain, and water supply for domestic purposes shall not be drawn therefrom.
- Thorough flushing to be secured. 3. Means for thorough flushing of all soil pipes, drain pipes, and water-closets shall be provided in every case.
- Subsoil drains to be provided for damp sites. SEC. 11. Subsoil drains should be provided wherever dampness of site of any proposed dwelling is known to exist.

SEC. 12. 1. The health officer shall be notified promptly, in writing, and upon blank forms to be provided for that purpose, when the plumbing work on any house is completed and ready for inspection. Notification to be given by plumbers.

2. The health officer shall direct the inspector of plumbing, immediately upon notification by the plumber, to proceed at once to inspect and pass upon the work, and all inspections shall be made within twenty-four hours after such notification. Inspection to be made at once.

3. No part of the plumbing work of any house shall be covered or in any manner hidden from view, until after such inspection shall have been made and a certificate of approval issued by the inspector. Work to remain exposed until after approval.

4. The inspector shall promptly condemn and order the removal of any defective material, or of any work done other than in accordance with the provisions of these regulations. Work done not in accordance with the regulations to be condemned.

SEC. 13. Prosecutions for infringement upon the provisions of these regulations shall be made by information filed in the police court of the District of Columbia. How prosecutions shall be instituted.

SEC. 14. These regulations shall be subject to alteration or amendment at any time.

SMITH TOWNSHEND, M. D.,
Health Officer, District of Columbia.

Approved.

JOSIAH DENT,
THOS. P. MORGAN,
WM. J. TWining, *Major of Engineers, U. S. A.,*
Commissioners of the District of Columbia.

ADDITIONAL REGULATIONS RELATING TO PUBLIC SEWERS AND WATER MAINS.

1st. No house or premises will be allowed to be connected with water, sewer, or gas main, without a permit first obtained from the engineer commissioner. This regulation applies to all sewers, whether on private property or in public streets or alleys. Permit required in all cases.

2d. Plumbers desiring to obtain permits for making the necessary excavation for making sewer connections must deposit with the collector of the District of Columbia the cost of branch pipe or other material required for use in connecting with the main sewer. Blank forms of application will be furnished to those plumbers who shall comply with all the requirements of the Commissioners. All applications must be signed by the owner of the premises, and his address written under his signature; signing by agents will not be accepted if the owner resides in the District of Columbia. Permits will be issued in duplicate, one for use of plumber and one for use of owner. Deposit to be made before permit can be obtained.
Blank forms.
All applications to be signed by owner of premises.
Permits to be issued in duplicate.

3d. One dollar is required by law to be paid as permit fee for each house connected, the receipt of which must be endorsed upon the application; the fee to be paid to the collector of the District of Columbia. Fee required.

4th. All water and sewer connections with the street mains and sewers must be inspected by the water and sewer tappers, respectively, before the trench is filled, whether the pipes are run to the building line or not, and all appointments for said tappers must be made when the permit is issued. Sewer laterals are not to be raised or lowered, or otherwise changed, except under the inspection of the sewer-tapper and by permit from the engineer commissioner. Inspections to be made before trench is filled, and no changes allowed except upon permit and under official supervision.

5th. All connections with pipe sewers must be made with Y branches. In all cases where connections are made with brick sewers a terra-cotta junction block must be used. Branches and junction blocks, and all other material for use in or about the public sewers must be purchased from the District. How connections must be made and material procured.

6th. Pipe sewers must not be cut, nor any connections be made in any manhole, trap, or trap lateral. Each house must be drained by a separate sewer, not less than six inches in diameter, having a fall of not less than one in forty, laid (inside the building line) entirely within the lot to which it belongs, and connecting outside the building line, only with that part of the system of drainage intended for it as shown on the general plans of sewerage on file in the office of the engineer commissioner. Pipe sewers not to be cut nor connected with manhole, trap, or trap lateral.
Each house to be drained separately.
Fall required and bounds prescribed.

Plumbers to notify water registrar.

Concrete pavements to be repaired by contractor and block pavements by superintendent of repairs.

Deposit to be made for removal of pavements.

How excavations must be filled.

Permit to be kept on ground while work is being performed.

Connections to be made only in the presence of the sewer-tapper and owners to take all risk.

Valve to prevent back-flow to be used wherever necessary.

Time allowed for filling trench and relaying pavement.

7th. All plumbers are required to notify the water registrar of any and all extensions or alterations of water fixtures and pipes made inside of buildings, so that the same may be examined.

8th. All concrete pavements must be repaired by the contractor doing such work for the District government, and all granite block pavements by the superintendent of repairs, at rates to be fixed by the commissioners. Persons desiring to remove said concrete or granite block pavement must first deposit with the chief clerk of the engineer department the sum of ten (\$10) dollars, the receipt for which must be exhibited to the permit clerk before the permit is issued. After the completion of the work the surplus, if any, will be returned.

9th. All excavations must be filled and pavement relaid in as good order as before said excavation was made, within thirty days from commencement of work, and the work must be commenced within thirty days from date of permit. The permit must be kept upon the ground while the work is being done, and shown whenever called for. The police are instructed to arrest, as required by law, any one they may find making an excavation without a permit.

10th. The connection with the public sewers will be made only in the presence of the sewer-tapper, and the excavation will be left open until his arrival. All permits for tapping sewers are given on condition that owners take all risk of damages that may result from water setting back into the cellars from the main sewers.

11th. In order to prevent as much as possible the setting back of water from sewers, the owner shall be required, at his own cost, to put in a self-acting or other valve in all cases when back-flow from a sewer is to be apprehended; and it shall be the duty of the owner to keep the valve in order, and he must be responsible for its action in all cases. When the sewer connection is of iron, and carried up within the premises as a close pipe, without opening or connection of any kind, above the level of all back-flow, the flood-valve may be dispensed with, being unnecessary.

12th. The trench must be filled up and rammed within 48 hours after making the connection, and the pavement relaid, not less than twenty days after the filling, all in a workmanlike manner, so that no settling will occur. All rubbish must be removed from street on the completion of the work.

Approved December 19, 1881.

In pursuance of authority conferred by the act quoted, Mr. Samuel A. Robinson was appointed as Inspector of Plumbing, and is at present performing the duties in a manner very satisfactory to all concerned. The first annual report of the Inspector of Plumbing will be due next June, and will no doubt prove an interesting document.

AIR SUPPLY IN DWELLINGS HEATED BY HOT AIR.

As a subject closely associated with that of house drainage, and a matter which has not hitherto been treated with that care which its importance demands, I desire to call attention to the ordinary means used in supplying air in the heating of dwellings by means of furnaces and "Latrobe" stoves. So many of our houses have stoves and furnaces defectively constructed in this respect, that I trust the few words which follow may receive careful attention. How many of us who have Latrobe stoves in dining and sitting rooms, have become familiar, in our sleeping-rooms above, with the odor from one or the other of the rooms below. How many occupants of rooms in boarding-houses have come to readily diagnose the complexion of the coming breakfast by turning on the register in their bed-rooms. How often have many of us learned in the room above, supplied from Latrobe in office or sitting-room below, that a poor cigar was being burned by some smoker in the apartment last mentioned. These I give as common illustrations of the channels through which impure air may be brought

to our living and sleeping-rooms. Probably you will say that the odors arising from beefsteak, coffee, and cigars would not be liable to prove detrimental to health, and I grant you the point is well taken. This, however, is not the question. There is any quantity of free pure air all around us, and there is no necessity for breathing that which has been once breathed by the cook, which has passed over the viands fresh or stale, or traveled through the interstices of tobacco, and come out with the smoke of a cigar. All that is required to accomplish the avoidance of such conditions, and the securing of an adequate supply of fresh air to furnaces and Latrobes, is to see that there is a proper cold-air duct taken from some point out of doors, and all means for the taking in of in-door air excluded.

The importance of this suggestion should not be underestimated. In many instances in this and many other cities, hot-air furnaces are located in unventilated cellars, and having no cold-air duct from the outside, the inmates of the entire building are forced to breathe the air taken up from the cellars. The cellar is probably made a receptacle for all refuse from the rooms above, there is an accumulation of ashes and filth in the corner, an imperfectly drained surface and a defective sewer trap to sewer opening in the floor, with other insanitary conditions generating impurities to be taken up by the ducts of the furnace, and conveyed above for use as lung food by the unfortunate and unsuspecting occupants.

Instances are known where the furnace has been set in a pit in the cellar (room not being given between floor and ceiling) and the trenches about this pit found filled with stagnant water, dead rats, mice, &c. Latrobes have been taken out and a hole found under the hearth, whereby all air for rooms supplied was taken from a damp and entirely unventilated cellar. In the winter season with all possible means of ingress for cold air to rooms stopped and the hot air being supplied from such a source as described, can we wonder that cases of typhoid and scarlet fever, diphtheria and other diseases dependent upon impure air are developed? It is said, and very truly, too, that ventilation is wasted when directed against any avoidable pollution of the air. It is the wisest policy to see that nothing is taken into your dwelling by one channel which it may be necessary to construct another to remove. By all means acquaint yourself thoroughly as to from whence comes the air you heat to breathe.

THE ABATEMENT OF NUISANCES.

The number and character of the nuisances abated by direction of this department during the year is exhibited in the following table (Table A), and foots up 20,071. This number is 5,510 less than came to our notice last year, and the fact speaks a word in favor of our sanitary condition.

372 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

TABLE A.—Consolidated nuisances for the year ending June 30, 1881.

Nature of nuisance.	1880.						1881.					
	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.
Alleys	36	32	58	52	49	21	2	17	45	48	33	7
Alleys need repair	2	1	1	1	1	2	1	3	20	1	7	1
Alleys, garbage in	20	14	35	24	13	5	2	1	4	14	10	3
Areas	4	1	1	1	1	5	2	2	6	4	3	1
Ashes	43	47	61	219	140	79	9	17	76	189	146	71
Cellars	8	2	2	10	4	3	6	3	21	18	14	13
Drainage, defective	68	71	59	59	54	30	4	6	49	65	40	65
Factories, soap	1	1	1	1	1	1	1	1	1	1	1	1
Garbage	28	15	32	34	32	7	5	4	11	6	7	7
Gutters	35	14	20	13	12	1	1	1	1	18	20	20
Hog-pens	24	9	18	17	2	10	1	1	1	1	7	5
Houses, filthy	29	14	10	16	7	12	1	7	3	19	13	23
Houses unfit for habitation	1	17	16	22	2	2	1	4	6	15	29	14
Houses, slaughter	1	1	1	1	1	1	1	2	2	11	2	2
Houses, no privy	7	4	4	2	4	3	4	4	3	3	3	4
Hydrants	3	2	3	3	2	2	5	3	2	2	3	3
Lots, filthy	15	22	29	20	9	1	1	2	10	18	10	10
Lots, stagnant water	4	1	2	2	3	1	1	3	6	2	4	4
Manure	40	32	44	45	32	23	8	14	45	44	54	40
Markets, public	121	90	66	107	53	65	37	40	100	88	104	98
Miscellaneous	1	1	1	1	1	1	1	5	1	1	1	1
Pumps	1	1	1	1	1	1	1	1	1	1	1	1
Pipes, water	1	1	1	1	2	10	4	3	6	4	5	4
Ponds	1	2	1	1	1	1	1	1	1	1	1	1
Privies, filthy	588	437	398	503	369	286	250	240	289	319	328	327
Privies, dilapidated	9	5	8	6	4	8	4	7	5	7	8	3
Privies, full	759	626	559	665	447	365	312	282	361	397	377	371
Privies, leaky boxes	210	139	124	108	68	33	9	12	34	47	81	103
Roofs, leaky	2	1	5	1	2	9	6	3	7	7	7	5
Sewers	32	22	47	27	13	14	19	18	30	32	32	28
Sewers, house connection	7	10	11	19	2	3	5	7	11	17	16	7
Stables	17	13	28	23	4	10	1	1	9	11	17	11
Stables, cow	6	10	13	13	11	3	7	15	18	14	16	22
Streets, filthy	2	2	2	3	1	1	1	1	1	1	1	1
Streets need repair	24	27	19	37	14	4	4	3	10	24	29	39
Traps, sewer	354	370	411	511	310	173	22	44	191	293	217	228
Yards	4	4	1	10	7	1	3	4	4	4	5	3
Yards, cow	4	4	1	10	7	1	3	4	4	4	5	3
Vaults, privy	5	1	2	2	1	1	1	1	1	1	1	1
Water-closets	19	9	11	24	10	27	24	17	15	26	17	4
Wharves	1	1	1	1	1	1	1	1	1	1	1	1
Total	2,528	2,064	2,100	2,601	1,670	1,226	743	769	1,327	1,750	1,701	1,583

TABLE B.—Consolidated report of nuisances for ten years ending June 30, 1881.

Nature of nuisance.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	Total
Alleys	982	1,508	1,986	1,315	800	608	357	453	466	560	9,800
Areas	12	18	18	65	83	52	27	56	35	26	400
Cellars	54	245	175	178	159	115	137	169	186	104	1,000
Drainage, surface	286	658	2,036	1,000	1,000	228	443	725	645	576	5,000
Excavations	41	48	49	35	19	6	27	15	5	1	200
Gutters	902	1,008	989	363	323	279	216	178	208	141	4,000
Garbage	457	566	1,128	455	345	215	219	88	241	181	3,000
Hog-pens	219	211	61	45	68	57	50	49	119	94	1,000
Houses, filthy	108	800	1,426	871	424	512	245	148	191	160	4,000
Houses unfit for habitation	1	1	1	1	1	1	1	1	1	1	10
Houses, condemned	1	1	1	1	1	1	1	1	1	1	10
Houses, no privy	1	1	1	1	1	1	1	1	1	1	10
Hydrants	51	147	64	96	50	27	26	31	26	31	500
Lots, filthy	1	538	605	190	408	79	103	357	183	126	2,000
Lots, stagnant water	447	981	1,292	1,619	768	513	523	107	293	421	6,000
Manure heaps	1	1	1	1	1	1	1	1	1	1	10
Markets, public	1	1	1	1	1	1	1	1	1	1	10
Miscellaneous	447	1,020	1,554	1,764	913	617	746	1,080	1,406	2,067	10,000
Pumps	235	93	111	206	21	22	20	6	4	7	500
Pipes, water	23	67	85	79	33	36	48	31	27	40	500

TABLE B.—Consolidated report of nuisances for ten years ending June 30, 1881—Continued.

Name of nuisance.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	Total.
Ponds, stagnant.....	463	174	9	330	166	219	360	195	106	32	2,054
Privies, filthy.....	1,826	5,030		1,591	2,023	909	1,891	3,851	6,517	4,314	28,132
Privies, full.....			6,089	7,300	5,538	9,385	3,745	6,327	8,532	5,521	53,437
Privy-boxes, leaky.....			727	1,035	830	641	896	903	1,518	968	7,518
Privies, dilapidated.....				239	478	188	171	204	87	69	1,434
Roofs, leaky.....						172	301	331	111	55	970
Sewers, public.....		717	182	278	401	215	248	212	270	314	2,837
Sewers, house connection.....			11	1,340	1,641	393	247	317	109	115	4,173
Stables.....	305	711	1,059	682	293	394	456	245	275	292	4,712
Streets, filthy.....	622	531	469	294	186	98	70	92	53	17	2,432
Traps, sewer.....	177	168	225	814	512	254	115	219	225	234	2,443
Yards.....	936	1,480	2,643	2,839	2,610	1,813	1,057	1,719	3,438	3,124	21,159
Yards, cow.....	35	92	84	90	437	151	193	23	23	45	1,173
Vaults, privy.....				.70	39	16	17	23	2	7	174
Water-closets.....	10	142	107	318	109	108	120	149	133	213	1,558
Slaughter-houses.....	65	66	56	62	24	14	21	14	19	24	385
Total.....	8,703	16,019	23,885	24,510	20,261	18,095	14,493	18,775	25,587	20,071	189,879

ALLEYS.

The condition of many of our alleys adds largely to the nuisance table every year, and I can only repeat the recommendation formerly made of having the alleys paved and sewered as fast as possible. I take this opportunity also, while speaking of alleys, to indorse the petition of the physicians to the poor, asking that the populated alleys be named and the houses therein numbered. Every movement looking to an improvement of their condition in any way renders the committing of nuisances in them less liable to occur.

ASHES.

Ashes have again contributed a large share to the total number of nuisances reported, no less than 1,097 standing accredited to this account. Iteration and re-iteration is usually necessary to secure the accomplishment of needed reforms, and I propose to continue still further the agitation of this question of the removal of ashes from all dwellings at the public expense. Last year but 425 cases where ash traps had become nuisances were reported, while this year the number has crept up to 1,097. In my last annual report attention was called to this matter in the following words:

This is a subject of no small importance, and one upon which I think action has been too long delayed. No provision is made for the removal of ashes by the authorities, and as a consequence large accumulations are found in alleys, yards, and vacant spaces over the entire area of the two cities. These accumulations of ashes become also a place of deposit for filth and refuse of all kinds, and entice the creating and maintaining of numberless nuisances. On a majority of premises in Washington and Georgetown you will find in cellar, area, or yard such an accumulation. In some cases it is kept in box or barrel, in others it is dumped on the ground or pavement in one corner of the yard. To it is added daily some portion of refuse, animal or vegetable, potato-parings, egg-shells, dish-water, and other refuse. If in the cellar, which you will find in many instances is the case, the foul odors and noxious gases emanating therefrom permeate the entire house, and their constant inhalation by the inmates results in some form of low fever, which no one can account for, and which is accordingly set down, in case of death therefrom, as a visitation of Divine Providence. The ash of wood or coal is not set down in the category of nuisances, and taken alone there is nothing in either to prove injurious to health, but, as I said before, the accumulation invites deposits of animal and vegetable matter, and these decaying do create a nuisance, and one which, if within a building used as a dwelling, is liable to prove injurious to the health of the inmates.

I think, therefore, it would be a wise measure for the authorities to take steps looking to the regular removal of ashes from dwellings. This is a work performed in many cities, and one which I think could be inaugurated and successfully conducted here at no very great expense.

I would earnestly recommend that an appropriation be asked of Congress at the coming session to meet the requirements of such a service.

DEFECTIVE DRAINAGE AND HOUSE SEWERS.

The good work of bettering the drainage of yards and enforcement of house connection where sewers are available is being pushed forward with due energy. During the year 576 defects in drainage have been remedied and 115 connections with sewers made, upon notice from the department.

SOAP FACTORIES.

This item, so suggestive of appropriateness in the category of nuisances, bids fair to disappear entirely from our list. The figure covers the year's work in this line, and no further trouble from soap factories is apprehended. The question as to authority of the health department to abate nuisances of this character was finally decided with the legalization of the health ordinances by Congress took place, and the perpetrations of nuisances of that class have yielded submission.

GARBAGE.

The question of the removal of garbage is not new. All are acquainted with the trouble, continued from year to year, and the numerous contracts annulled. We have been hoping against hope for better things in this line. We have been promised by contractors and have promised to people in return. How these promises resulted is known to the public. Now, however, we have better reason to hope; my recommendation of last year, that a sum sufficient to secure a proper performance of the work of removing garbage be asked, was acted upon, and the present contractor is receiving an advance of one-third on the former price for the same labor. The outlook now, it affords me much gratification to say, is that the trouble has been effectually remedied.

The following table shows amount of offal collected and removed during the year:

Months.	Number of dead animals.	Tons of garbage.	Barrels night soil.
1880.			
July.....	573	1,035	1.
August.....	999	1,923	1.
September.....	560	2,184	1.
October.....	449	1,699	1.
November.....	358	691	
December.....	305	427	1.
1881.			
January.....	111	289	
February.....	445	445	1.
March.....	407	502	
April.....	714	282	1.
May.....	563	494	2.
June.....	478	609	2.
Total.....	5,957	10,560	15.

HOUSE NUISANCES.

When we come to consider the question of house nuisances, the urgent demand for legalization of sections 7 and 9 of the ordinances (pass

over for some reason at the time action was taken by the Senate) presents itself. Section 9, which applies specially to houses and house nuisances, reads as follows:

SEC. 9. That any dwelling-house or building wherein people live, congregate, or assemble, which is deficient in ventilation, drainage, or other provision essential to health, which has a leaky roof or is below grade, so as to render the walls thereof damp and the rooms unhealthy, or is decayed or filthy, and premises which are filthy and offensive, are hereby declared nuisances injurious to health; and any person who shall create or maintain such nuisance, and who shall fail, after due notice from this board, to abate the same, shall, upon conviction, be fined not less than five nor more than fifty dollars for every such offense.

Now, it will be seen by reference to the table that during the year 160 houses have been found in filthy condition, while 129 were in such condition as to be pronounced "unfit for human habitation." The importance of having a law to govern such cases certainly will not be questioned in this enlightened age. I have often wondered what could have been the influence which led to the striking of the two sections named from the list, when the ordinances were legalized. I cannot imagine that such a body as the United States Senate desired to legislate in the interest of penurious landlords who would have tenants live in houses the sanitary condition of which would endanger the health and lives of the occupants, and yet, at the same time, I cannot think that what is supposed to be the body representing the intelligence of our land, in its highest order, failed to appreciate the necessity for placing such a law upon the statute books.

The same argument applies to the action taken on section 7, which relates to *stagnant water on lots*. This section was also stricken out when the resolution legalizing the ordinances was passed. It reads as follows:

SEC. 7. That stagnant water upon any ground or lot within the cities of Washington or Georgetown or the more densely populated suburbs of said cities, and any marshy land, the same being made such by defective drainage or otherwise, are hereby declared nuisances injurious to health; and any person causing, creating, or maintaining such nuisance who shall, after due notice from this board, refuse or neglect to abate the same shall, upon conviction, be fined not less than ten nor more than one hundred dollars for every such offense.

It is greatly to be regretted that the labor in this direction has been so seriously embarrassed by the action referred to. It would scarcely seem necessary to argue in favor of the importance of preserving a well-drained soil and enforcing the removal of all stagnant ponds; such action is strongly urged by all authorities upon hygiene and public health. We can only hope that our lawmakers may be brought to see their mistake and not delay its correction. If the long-pending "municipal code" is not taken up at the coming session of Congress, then some special action should be had looking to a remedy of the evil resulting from the repeal of these two sections of these ordinances.

MANURE.

"Manure and its removal" is a subject which has been discussed in two former reports. The table gives evidence of 421 cases in which nuisances have arisen from this source, and doubtless manure has contributed in greater or less degree to many more.

The time has arrived which demands the adoption of means for the transfer, *through one channel*, of all offal from our cities. The country around the District of Columbia certainly gives evidence of the want of all the sustenance to her soil that the refuse of our cities can give

it. Much more is taken from the farms and market-garden lands surrounding us than is put back. Much more is wasted here than would give ample food to those lands. Victor Hugo, in *Les Misérables*, gives a striking picture of the waste of a great city. The earth, he says, is impoverished by the sea.

Paris [he says] casts twenty-five millions of francs annually into the sea, and this we assert without metaphor. How so and in what way? By day and by night. To what object? For no object. With what thought? Without thinking. What to do? Nothing. By means of what organ? Its intestines. What are its intestines? Its sewers. Twenty-five millions are the most moderate of the approximative amounts given by estimates of modern science. * * * Science, after groping for a long time, knows now that the most fertilizing and effective of manure is human manure. The Chinese, let us say it to our shame, knew this before we did. Not a Chinese peasant who goes to the city but brings at either end of his bamboo a bucket of what we call filth. * * * Thanks to the human manure the soil in China is still as youthful as in the days of Abraham, and Chinese wheat yields just one hundred and twenty fold the sowing. There is no guano comparable in fertility to the detritus of a capital, and a large city is the most important of dungnuxous. * * * To employ the town in manuring the plain would be certain success, for if gold be dross, on the other hand our dross is gold.

What is done with this golden dung? It is swept into the gulf. We send at great expense fleets of ships to collect at the southern pole the droppings of petrels and penguins, and cast into the sea the incalculable element of wealth which we have under our hand. * * * All the human and animal manure which the world loses if returned to the land instead of being thrown into the sea would suffice to nourish the world. * * * Do you know what those piles of ordure are collected at the corners of streets, those carts of mud carried off at night from the streets, the frightful barrels of the night-man, and the fetid streams of mud which the pavement conceals from you? All this is a flowering field; it is green grass; it is mint and thyme and sage; it is game; it is cattle; it is the satisfied lowing of huge oxen at evening; it is perfumed hay; it is golden wheat; it is bread on your table; it is warm blood in your veins; it is health; it is joy; it is life. * * * So desires that mysterious creation, which is transformation upon earth and transfiguration in heaven. Restore this to the great crucible, and your abundance will issue from it, for the nutrition of the plains produces the nourishment of men. You are at liberty to lose this wealth and consider me ridiculous into the bargain. This would be the masterpiece of your ignorance. * * * Each eructation of your drains costs us one thousand francs, and this has two results—the earth impoverished and the water poisoned; hunger issuing from the furrow and disease from the river. These surprising follies are not new; it is no youthful nonsense. Imitate Paris and you will ruin yourself. Moreover, Paris imitates itself, particularly in this immemorial and insensate squandering. * * * “The drains of Rome,” says Liebig, “absorbed the entire welfare of the Roman peasant.” When the Campagna of Rome was ruined by the Roman drains Rome exhausted Italy, and when it had placed Italy in its cloaca it poured into it Sicily, and then Sardinia, and then Africa. The drains of Rome swallowed up the world, and this cloaca afforded its tunnels to the city and the world. *Urbi et Orbi*. Eternal city, unfathomable sewer.

This argument applies alike to the waste of the other offal of great cities as well as to that carried off by its sewers, and it applies to Washington as well as Paris. The day is coming when our sewage must be preserved, and all that is in it to nourish the land taken out and returned to our fields.

Like the Roman cloaca, which absorbed the richness of its own land and then gulped down Sicily, Sardinia, and Africa, so have the sewers in the older cities of this our new world absorbed the sustenance of many fields and farms in the older States without returning anything, and then sent the sons of those who once tilled a rich, fertile soil, off to the great West to open new veins for their vampire mouths. It is time that we were learning something from China in the preservation of our soil. It is nothing new to hear of “played-out” farms in Maryland and Virginia, and there is no reason why all the wealth of manure which is now wasted in the capital should not be applied to those “played-out” farms and set them to again putting “bread on our tables and warm blood in our veins.”

Perhaps the day of irrigating farms for the preservation and utilization of our sewage has not yet arrived, but the day and hour is here which speaks loudly the demand for utilization of all other offal from our cities. We should have one point for the receipt of all refuse, and the law should require that it be there taken and deposited at regular stated periods from all dwellings and places where it accumulates. The authorities themselves should take charge of this material, which should include offal and filth of all kinds, and they should put it in condition to again be placed upon the fields and farms. Let us begin by purchasing a farm of our own and enriching that. A farm of a few hundred acres at some convenient point could soon be made a source of profit to the District. By all means let us have an offal depot and a city farm.

SEWER-TRAPS OR CATCH-BASINS.

Iteration again becomes necessary in referring to the subject of the cleaning of our sewer-traps or catch-basins at street corners. The very dry weather prevailing during the summer and fall of the past year has rendered these receptacles for the sediment of our street washings more than usually offensive, and added (if it were necessary) additional evidence of the demand for some more approved method of cleaning. The work of cleaning these places is performed under direction of the Engineer Department, and I can of course but advise respecting the manner in which it should be done. Nuisances to the number of 234, resulting from the foul and offensive condition of sewer-traps, were reported during the year. To quote my former words on this subject:

It does seem strange that, with the advance of improvements in almost every branch of public work, the present system of cleaning sewer-traps, corresponding to the ancient method of cleaning our cobble-stone streets with hoes and shovels, and the privy-boxes with buckets, should still remain. It certainly looks, to say the least, out of keeping with other things to see three or four men with hooks and buckets dipping the foul accumulations from one of these receptacles, depositing the mass on the pavement, and then dragging it off through the street in open carts, to offend the nostrils of every passer-by. If some pneumatic process cannot be brought into use to abate this nuisance, then, during the summer months, disinfectants should be used, and closed receptacles employed in transporting the material.

The present method is clearly in violation of section 2 of the Health Ordinances.

FOOD INSPECTION.

The following table (Table C) will show the nature and amount of food condemned as unwholesome during the year. Much has been accomplished in this direction during the past few years, but much remains yet to be done which can only be reached through the inspection of live stock and the establishment of an abattoir.

A well-known German authority, in speaking of the subject,* says:

The necessity can no longer be disputed. This arises, first, from the possibility of the infection of meat used for human food; and, secondly, the butchers have not the necessary knowledge, and much less the good will, to consider the health of the people against a possible increase of profits. Butchers, as a rule, do not believe in the danger from diseased meat, and therefore cannot be convinced of what is so clear to us.

The compulsory slaughtering in public abattoirs offers other advantages, which in themselves are sufficient to make it desirable:

(1.) *It will put an end to the driving of cattle through the streets of our larger cities.*—This inconvenience is overcome in Berlin, where, according to the street regulations, cattle moved in the day-time must be transported in closed wagons.

(2.) *Prevention of cruelty in butchering.*—It is not necessary to prove how much cruelty may be practiced in the slaughter of animals. In private slaughter-houses it is not

* "Trichinæ and Trichonosis;" Glazier.

seldom in consequence of insufficient room, deficient arrangements for holding the victim firmly, and especially in consequence of lack of firmness in handling the instrument of death, which can alter the best methods of killing animals to a system of torture. In the large abattoirs the work is divided; every man attains the greatest possible dexterity in his particular work, and thus only can the greatest possible certainty of rapid death be secured. The international congress for the prevention of cruelty to animals, held in Zurich in 1869, saw correctly in the erection of abattoirs an effective expedient to prevent unnecessary pain to animals.

(3.) *Greater cleanliness on account of the more judicious arrangements and cleansing with water.*—The most careful cleanliness in private slaughter-houses cannot compete with the properly arranged abattoirs, because the space, especially in the larger cities, is always very limited, but even in ordinary cases is generally insufficient, and filthy in the rule, and it only exceptionally occurs that the accumulations do not become unbearable. In public slaughter-houses the care for the best possible state of cleanliness is increased by its publicity.

(4.) *With the closing of private slaughter-houses in cities abundant sources of air-poisoning are removed.*—Those living in the vicinity of slaughter-houses know best how often in summer the air becomes foul, particularly near open water-courses. The question here not only concerns the foulness and unpleasantness of the air, but from the putrefaction of blood very often arise peculiarly dangerous substances, which are directly infectious and therefore in densely populated cities the greatest care should be taken to prevent such decomposition.

(5.) *Real progress in the control and extermination of infectious and contagious diseases among domestic animals.*—It is a fact that the public in general is inclined to hide contagious diseases, and on this account it is very difficult to check and especially to exterminate them. Obligatory inspections of slaughtering are by far the surest means of accomplishing this end. The discovery of contagious diseases in the abattoirs is important, for this reason alone the compulsory use of the public building should be inaugurated in every city. When the enormity of the danger to the public health on account of the diseases of our domestic animals in the present condition of commercial intercourse is considered, and when it is seen that we can seldom prevent their introduction by isolation, but that our efforts must be directed to a rapid destruction—that we can do little to prevent but must act to repress—it may be safely said that a successful exercise of the duties of the veterinary police without legal control of the slaughter-houses can by no means be accomplished.

With all these great advantages to the states and the cities the butchers will lose nothing. On the contrary they have the greater advantage in the expenses; the slaughtering together is handier and cheaper, and the scraps and offal can be more readily utilized. In former times the slaughter-houses, as the bakeries, were erected solely for the profit to the trade. No supervision was necessary in those days. The butchers know this very well, and when they (as in North Germany) nevertheless oppose the obligatory use of public slaughter-houses by bringing forward all possible difficulties and the cost, they must have some ulterior object, which probably is that they do not wish to be interfered with in their business, which indicates still more the necessity of supervision. The profits made must certainly be great when the butchers reject the very apparent advantages and conveniences of public slaughter-houses.

It may thus be seen that in the most cultivated cities in Europe the necessity of compulsory use of public abattoirs has become apparent, but it seems inexplicable that such measures have not succeeded in North Germany, where the consumption of meat is greatest, and where pork and beef are often eaten in a raw or half-cooked condition, and where therefore the danger of infection is much greater than in other countries.

TABLE C.—Unwholesome food condemned during the year ending June 30, 1901.

Articles.	1890.						1891.					
	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.
Beef.....pounds.....	2,826	2,598	2,920	954	713	51	21	36	761	438	1,594	816
Mutton.....do.....	696	591	646	228	149	51	6	47	114	96	158	138
Veal.....do.....	611	413	443	230	6	76	.....	102	617	885	387	301
Pork, bacon, and sausage.....do.....	622	308	978	196	136	48	41	96	103	408	282	190
Poultry.....do.....	77	42	390	360	1,055	425	396	246	198	206	5	.....
Rabbits and squirrels.....do.....	.....	.....	.....	.....	57	54	78	3	.....	.....	.....	.....
Apples.....bushels.....	37	34	24	26	14	18	31	37	46	35	48	4
Cabbage and lettuce.....do.....	1,275	916	706	714	274	304	271	444	345	252	713	768
Corn.....bushels.....	970	1,149	489	844	9	.....	.....	.....	.....	.....	.....	.....
Cantaloupes.....dozen.....	1,896	8,817	3,277	237	2	.....	.....	.....	.....	.....	.....	.....
Cucumbers.....dozen.....	1,058	385	346	155	5	.....	.....	.....	.....	.....	222	1,668
Cylinders and pumpkins.....do.....	5,839	2,949	54	98	103	235	449	114	22	.....	20	4,039
Egg plants.....do.....	74	1,107	671	741	110	.....	.....	.....	.....	.....	.....	.....
Peaches and pears.....bushels.....	5	22	40	1	.....	.....	.....	.....	.....	.....	.....	68
Potatoes and parsnips.....do.....	28	1	11	18	26	502	92	50	47	27	225	11
Pease and beans.....do.....	125	32	38	23	.....	.....	.....	.....	.....	.....	.....	.....
Tomatoes and turnips.....do.....	81	87	54	54	18	9	25	21	22	26	11	42
Watermelons.....do.....	6,941	14,379	814	175	4	.....	.....	.....	.....	.....	.....	.....
Berries.....quarts.....	883	183	94	190	37	19	3	31	.....	.....	121	8,006
Grapes.....pounds.....	.....	27	357	.....	.....	.....	73	.....	.....	.....	.....	.....
Eggs.....dozen.....	.....	.....	.....	.....	.....	.....	.....	3,000	.....	.....	.....	20
Butter.....pounds.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	411
Kale.....bushels.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Miscellaneous vegetables.....do.....	130	159	126	103	56	604	76	55	624	1344	308	211
Miscellaneous vegetables*.....bunches.....	1,634	43	28	61	135	24	559	271	367	4,663	1,631	1,225
Total.....	13,718	2,908	4,071	3,406	8,400	1,029	354	6,983	2,981	14,223	8,821	13,909
	13,718	2,908	4,071	3,406	8,400	1,029	354	6,983	2,981	14,223	8,821	13,909

* Includes radishes, beets, asparagus, celery, carrots, rhubarb, &c.

TABLE D.—*Unwholesome food condemnations for nine years ending June 30, 1881.*

Articles.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	Totals.
Beef.....	11,650	10,139	9,507	9,396	6,976	9,485	12,365	20,196	13,718	103,442
Veal.....	11,296	2,981	2,485	2,811	3,029	2,436	8,701	5,404	4,071	43,224
Mutton.....	1,335	2,316	2,029	2,135	3,068	1,926	5,438	6,424	2,908	27,579
Bacon, ham, and pork.....	3,853	7,478	4,063	7,875	3,234	5,519	5,559	6,558	3,406	47,585
Birds, rabbits, and squirrels.....	453	561	981	670	819	586	459	1,361	192	6,362
Poultry.....	824	1,800	1,125	3,270	5,284	14,542	1,928	3,261	3,400	85,434
Eggs.....	.....	485	2,702	2,632	3,314	4,183	118	2	.....	13,847½
Cheese and butter.....	50	.....	1,559	86	.....	.....	327	.....	3,000	52,172
Potatoes.....	.....	167	160	350	242	124	316	281	1,028	2,968
Beans, peas, and onions.....	172	245	705	92	128	121	170	318	260	2,211
Cabbage and lettuce.....	4,458	10,819	9,105	15,118	3,277	5,622	5,473	13,181	6,982	74,035
Squashes and pumpkins.....	.....	88	1,415	1,075	24	66	632	33,385	13,909	50,594
Corn.....	17	121	786	1,032	642	585	1,119	2,360	2,961	9,633
Cucumbers.....	1,976	2,965	3,690	1,624	303	296	814	2,712	3,821	19,292
Egg plants.....	180	359	1,025	1,305	380	404	1,740	3,606	2,703	11,702
Tomatoes and turnips.....	.....	154	185	82	287	158	92	528	429	1,925
Kale.....	.....	18	134	30	124	139	54	223	245	977
Apples, peaches, and pears.....	222	287	1,402	257	664	679	63	1,149	422	4,723
Watermelons.....	9,160	7,977	20,689	11,083	15,689	14,565	4,455	21,459	22,313	127,400
Cantaloupes.....	2,339	7,117	6,162	6,626	6,514	6,571	6,074	18,231	14,228	73,862
Berries.....	114	2,378	6,150	652	1,053	538	.....	1,272	4,419	11,176
Cherries.....	158	19	1,336	10,112	1,184	.....	.....	.....	.....	12,809
Coconuts.....	.....	.....	513	500	.....	.....	.....	.....	.....	1,013
Oranges and lemons.....	22	.....	128	206	76	.....	.....	196	.....	1,628
Miscellaneous fruits and vegetables.....	27	27	281	1,213	97	117	896	1,030	1,506	5,077
Miscellaneous vegetables.....	391	646	1,241	1,177	1,539	2,703	755	8,901	10,591	27,014

THE INSPECTION OF MARINE PRODUCTS.

Congress at its last session was convinced of the necessity for providing an inspector of marine products, and we were enabled to dispense with the services of Officer J. R. Sutton, who had been detailed to perform this duty.

Mr. Gwynn Harris was appointed as inspector on July 1, and has proven himself a very capable and efficient officer. The following tabular statement (Table E) exhibits work done in this branch of the service during the year:

TABLE E.—*Inspections and condemnations of marine products for the year ending June 30, 1881.*

Articles.	1880.						1881.					
	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.
INSPECTIONS.												
Oysters..... bushels.	1, 140	1, 604	15, 920	60, 445	57, 735	55, 514	23, 988	30, 300	35, 900	31, 806	4, 450	900
Fish..... bunches.	5, 340	8, 396	7, 861	27, 979	23, 296	6, 053	330	3, 070	44, 754	47, 473	20, 149	6, 753
Herring.....								1, 000	117, 173	3, 710, 486	5, 633, 014	167, 000
Shad.....								40	5, 432	237, 469	196, 928	12, 648
Blue-fish.....	125, 643	78, 443	44, 975	26, 695	2, 130				715	38, 602		32, 280
Sturgeon.....	230	55	69	34							163	543
Trout.....	5, 600	5, 300	19, 250	21, 930								1, 124
Crabs.....	132, 190	58, 806	40, 695	7, 972						31	43, 254	740
Clams.....	281, 147	6, 297	37, 000						1, 000	154, 000	211, 826	59, 366
Lobsters.....	5		44	58	25	43				4	302, 19	342, 344
Terrapin.....		433		43						10	2	2, 200
Sheepheads.....	150	19	20	608	207	872	125	72	479			71
Turtles.....	17						30					61
Mackerel.....	8, 165	1, 629	4, 410	1, 810			61					21, 274
Porgies.....	574	10	105	14								5, 260
Drums.....			81	66								1, 036
												333
												1, 147
CONDEMNATIONS.												
Oysters..... bushels.	160	173	726	2, 355	410	266	86	1, 236	1, 295	3, 231	200	48
Fish..... bunches.	221	156	168	195	55	3	30	1, 000	45	1, 067	906	114
Herring.....										106, 200	114, 700	23, 500
Shad.....								40		24	30	94
Blue-fish.....			670							41		711
Sturgeon.....											2	3
Trout.....												5
Crabs.....	45, 794	22, 266	9, 545	2, 372						31	13, 954	150
Clams.....	13, 246	6, 967	400								3, 726	99, 735
Lobsters.....				36	25	43			7		63	3, 200
Terrapin.....	11					2		52		10	2	3, 19
Turtles.....												73
												3
												3

TABLE F.—Inspections and condemnations of marine products for nine years ending June 30, 1881.

Years.	Inspections.						Condemnations.									
	Shad.	Herring.	Blue-fish.	Fish, bunches.	Sturgeon.	Oysters, bushels.	Clams.	Crabs.	Shad.	Herring.	Blue-fish.	Fish, bunches.	Sturgeon.	Oysters, bushels.	Clams.	Crabs.
1873.....	852,900	3,789,800	326,200	553,761	496	448,537	534,000	336,000	270	82,600	.....	5,153	.....	6,602	5,050	11,900
1874.....	628,637	6,567,240	89,641	567,291	919	569,372	1,163,000	297,250	149	140	118	6,087	16	8,048	87,600	29,800
1875.....	464,215	1,674,465	56,430	557,203	1,240	305,737	1,110,725	446,525	60	2,125	.....	8,315	18	5,428	47,675	64,800
1876.....	819,079	1,488,950	47,500	483,111	919	355,437	704,975	316,498	54	1,850	.....	7,682	27	4,730	62,915	61,084
1877.....	131,199	2,572,124	5,450	361,749	635	295,967	863,470	347,415	26	7,024	175	6,393	83	10,677	43,540	57,800
1878.....	121,785	2,507,500	40,425	271,727	1,060	331,317	938,225	366,450	.....	.....	.....	5,211	41	15,178	27,630	48,825
1879.....	327,537	3,497,259	70,570	219,635	952	316,377	148,079	584,661	362	15,190	1,262	6,193	32	17,828	77,512	159,626
1880.....	321,285	6,858,839	253,458	176,558	1,094	361,427	1,301,750	698,789	212	160,095	1,473	4,558	4	11,236	54,857	124,648
1881.....	462,517	9,628,663	349,483	201,444	1,124	319,702	994,390	342,344	94	245,400	711	2,900	5	10,186	27,525	99,785
Total	3,629,104	38,564,860	1,239,357	3,363,477	8,439	3,323,923	9,081,614	3,786,532	1,227	480,424	3,779	52,482	228	90,542	434,724	658,308

THE POUND SERVICE.

The following tables exhibit the workings of the pound service during the past ten years. The showing is a very satisfactory one, and reflects credit upon the officer who has served so long and faithfully in the difficult position of pound-master.

The special attention of the Commissioners is invited to the necessity for securing legislation to remedy defect in the act of June 19, 1878, "to create a revenue in the District of Columbia by levying a tax on all dogs therein," &c., and provide for the proper enforcement thereof. In 1878, the first year after passage of this act, the receipts from this source amounted to \$10,505.12; in 1880, the aggregate was reduced to \$8,597.00, and last year it only reached \$3,336.32—as compared with 1879, a clear loss to the District of \$7,168.80. Action should be taken by Congress to remedy the defect in this law and save the amount named to the District.

Last year there were 3,651 animals impounded, of which number 3,162 were dogs; of the number last mentioned 2,805 were killed. During the ten years ending June 30, 1881, there were 29,162 animals impounded, of which number 23,316 were dogs.

TABLE C.—Operations of the pound for the year ending June 30, 1941.

Months.	Impounded.							Disposition.						Amount realized.		
	Horses.	Cows.	Mules.	Hogs.	Sheep.	Goats.	Geese.	Dogs.	Total.	Redeemed.	Killed.	Dogs killed.	Died.		Returned.	Sold.
July, 1880	4	51				15	8	192	270	86	184	175				\$158 00
August, 1880	2	19				13	9	297	870	115	754	745			1	216 25
September, 1880	8	14	4	4		19	10	297	350	80	266	239				159 50
October, 1880	3	16				6	23	278	326	62	259	235	4		1	135 75
November, 1880	1	16				11	13	218	259	69	190	182				113 75
December, 1880	1	1			1	5		122	130	25	104	104			1	52 38
January, 1881	1		2			5		12	20	6	14	11				13 25
February, 1881		2				6		253	261	25	238	231				50 00
March, 1881						4		209	213	25	185	183	3			56 00
April, 1881	5	3				8	6	338	348	43	300	264	5			85 50
May, 1881	9	14	1	3		23		289	339	51	275	248	8	5		123 75
June, 1881	3	52			4	6	40	154	259	114	144	138	1			174 00
Total	37	188	7	7	.5	121	109	3,177	3,651	731	2,891	2,905	21	5	3	1,388 13

TABLE H.—*Animals impounded during the ten years ending June 30, 1881.*

Years.	Horses.	Cows.	Mules.	Hogs.	Geese.	Sheep.	Goats.	Dogs.	Total.
1872	88	225	.....	40	210	124	182	375	1,174
1873	128	359	36	93	165	38	188	1,081	2,086
1874	60	169	22	57	64	4	129	2,200	2,705
1875	36	118	15	23	111	.....	142	2,246	2,891
1876	36	60	5	3	93	.....	162	2,309	2,668
1877	187	.....	10	17	128	.....	108	2,456	2,884
1878	44	109	2	17	119	.....	162	2,828	3,081
1879	29	112	10	30	141	2	114	4,956	5,397
1880	32	255	1	12	483	8	106	1,728	2,625
1881	37	186	7	7	109	5	121	3,177	3,651
Total	520	1,660	108	299	1,442	181	1,636	23,316	29,162

386 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Statement of receipts and expenditures in the pound service for fiscal year ending June 30, 1881

RECEIPTS.

Date.	Source of receipts.	Amounts.
1880.		
July 1	Balance remaining, fiscal year ending June 30, 1880	\$0
31	Pound fees, month of July, 1880	\$153 00
Aug. 31	Pound fees, month of August, 1880	216 25
Sept. 30	Pound fees, month of September, 1880	150 50
Oct. 19	Pound fees, month of October, 1880	135 75
Nov. 25	Pound fees, month of November, 1880	113 75
Dec. 21	Pound fees, month of December, 1880	52 38
1881.		
Jan. 31	Pound fees, month of January, 1881	13 25
Feb. 25	Pound fees, month of February, 1881	50 00
Mar. 29	Pound fees, month of March, 1881	56 00
Apr. 30	Pound fees, month of April, 1881	85 50
May 31	Pound fees, month of May, 1881	123 75
June 30	Pound fees, month of June, 1881	174 00
	Total receipts	1,338

DISBURSEMENTS.

Date.	To whom paid.	For what paid.	Amount.
1880.			
July 30	D. McKenzie	Laborer	\$38
30	W. L. Mudd	do	35
Aug. 31	John Wells	do	32
31	Andrew Elliott	do	32
31	W. L. Mudd	do	33
Sept. 4	Andrew Elliott	do	1
27	William Brown	do	1
30	Albert Fortune	do	33
30	John Wells	do	25
30	W. L. Mudd	do	37
30	Joshua Murphy	do	32
30	Thomas George	do	1
30	M. Shanklin	do	8
30	Joseph Murphy	do	1
Oct. 25	N. H. Camp	Fees returned	2
30	Albert Fortune	Laborer	31
30	John Wells	do	31
30	Joshua Murphy	do	31
30	W. L. Mudd	do	37
Nov. 23	W. Boswell	Balance from sale	4
23	Albert Fortune	Laborer	26
23	John Wells	do	26
23	J. Murphy	do	26
23	W. L. Mudd	do	30
Dec. 11	Evening Star	Advertising	1
14	John Wells	Laborer	15
24	Joshua Murphy	do	15
24	Albert Fortune	do	16
24	W. L. Mudd	do	21
1881.			
Jan. 18	Evening Star	Advertising	2
31	Albert Fortune	Laborer	28
31	John Wells	do	3
31	Joshua Murphy	do	2
31	W. L. Mudd	do	2
Feb. 26	Albert Fortune	do	23
26	John Wells	do	18
26	Joshua Murphy	do	18
26	W. L. Mudd	do	22
Apr. 1	Albert Fortune	do	30
1	John Wells	do	28
1	Joshua Murphy	do	28
1	W. L. Mudd	do	32
May 1	Albert Fortune	do	32
1	John Wells	do	30
1	Joshua Murphy	do	30
1	W. L. Mudd	do	32
17	Evening Star	Advertising	2
June 1	Albert Fortune	Laborer	23
1	John Wells	do	33
1	Joshua Murphy	do	33
1	W. L. Mudd	do	20
15	Conrad Becker	Harness, &c	52
25	J. McDermott & Bros	Repairs	30
28	Evening Star	Advertising	1
30	W. J. Dunnivan, property clerk	Livery of horse	2

DISBURSEMENTS—Continued.

Date.	To whom paid.	For what paid.	Amount.
1881.			
July 1	A. Fortune	Laborer.....	\$32 50
1	J. Wells	do	32 50
1	Joshua Murphy	do	32 50
1	Shirley Williams	do	32 50
Total expenditures.....			1,338 38

RECAPITULATION.

Total receipts.....	\$1,338 26
Total expenditures.....	1,338 38
Amount overdrawn.....	12

THE SICK POOR.

The appropriation for relief of the poor being reduced one-third last year, we were forced to discontinue this very important service for two months; at least we were forced to cease payment of the physicians and furnishing of medicines. The physicians, however, volunteered to continue their services without cost to the District, and their offer was accepted. Had it not been for this action on their part great hardship would have resulted to the poor whom they attended. It was distinctly understood between the department and the physicians that the labor thus performed must be done without hope of fee or reward, and yet it was performed as earnestly and as thoroughly as at any time during the year. In view of these facts I think it would be only just that Congress appropriate a sum sufficient to pay these gentlemen for the services rendered, and I would recommend that this be asked.

An increase in the appropriation, or rather to the amount appropriated in former years, was secured at the last session of Congress.

The following table shows amount of work performed by physicians to the poor, and cost of medicines furnished during the year:

Months.	Patients treated.	White.	Colored.	Visits made.	Office consultations.	Cost of food furnished.	Cost of medicines furnished.
1880.							
July.....	1,032	343	689	1,318	411	\$155 89	\$191 85
August.....	964	315	649	1,199	329	223 47	162 50
September.....	1,224	496	728	1,816	340	117 45	292 30
October.....	1,338	591	747	1,843	405	159 23	205 65
November.....	799	317	482	1,095	284	205 55	164 30
December.....	940	329	611	1,308	267		
1881.							
January.....	1,276	396	880	1,852	357	272 61	274 85
February.....	1,344	447	897	1,896	378	320 00	269 10
March.....	1,132	374	758	1,584	326	.....	141 35
April.....	1,064	369	725	1,660	292	.....	140 50
May.....	432	135	297	648	176	.....	.....
June.....	455	164	291	743	142	.....	.....
Total.....	12,030	4,276	7,754	16,962	3,707	1,454 20	2,136 65

OUR WELL OR PUMP WATER.

A somewhat extensive report upon our pump water was contained in my last annual report; the result of the analysis of one hundred and five samples from as many wells, with an outline of the methods employed in analysis, the objects of search, and the meanings of certain classifications, were there given. The following is submitted as a continuation of that report:

Analysis of pump water in the District of Columbia.

Number.	Location.	Degrees of hardness.	Solid residue.	Organic matter and volatile.	Free ammonia.	Albuminoid ammonia.	Nitrates, nitrites.	Chlorine.	Mineral substance.	Microscopic examinations.	Opinion.
106	Cor. 19th and Pa. ave. n. w.	6	0.314	0.064	Traces.	no. 81 M. G.	60.213	0.070	Calcium, magnesium, potassium, sodium, silica, carbonic acid, sulphuric acid, chlorine, iron traces.	.....	Still usable, but in danger of pollution.
107	Seaton School.....	6	0.382	0.178	Traces.	Traces.	no. 16	do. 006	Calcium, magnesium, sodium, potassium, aluminum, silica, carbonic acid, sulphuric acid.	.....	Good water.
108	East side of Valley st., between Stoddard and Road sts., Georgetown.	4	0.400	0.053	Traces.	Traces.	Traces.	0.010	Calcium magnesium, sodium, potassium, aluminum, silica, carbonic acid, sulphuric acid, chlorine.	.....	Do.
109	Cor. 1st and Market sts., Georgetown.	6	0.200	0.025	Traces.	Traces.	0.020	0.030	Calcium, magnesium, sodium, potassium, aluminum, silica, carbonic acid, sulphuric acid, chlorine.	.....	Do.
110	Cor. High and Market sts., Georgetown.	3	0.080	0.010	Traces.	Traces.	Traces.	0.010	Calcium, sodium, magnesium, aluminum, silica, carbonic acid, chlorine.	.....	Very good water.
111	Cor. 12th and Pa. ave. s. e.	218	0.818	0.200	no. 02 M. G.	no. 12 M. G.	0.360	do. 482	Calcium, magnesium, sodium, potassium, aluminum, silica, carbonic acid, sulphuric acid, chlorine.	Bacteria, spirillum, flagellata, verticillina, monastyla, quadridentata.	Good water.
112	Cor. 8th and A sts. n. e.	6	0.212	0.064	Traces.	no. 08 M. G.	0.140	0.080	Calcium, sodium, magnesium, potassium, aluminum, silica, carbonic acid, sulphuric acid, chlorine.	.....	Do.
113	Cor. 12th and G sts. s. e.	3	0.094	0.020	Traces.	Traces.	0.030	0.050	Calcium, magnesium, sodium, potassium, aluminum, silica, carbonic acid, sulphuric acid, chlorine.	.....	Do.
114	Cor. 10th and S. C. ave. n. e.	4	0.294	0.090	Slight traces.	Slight traces.	0.120	0.160	Calcium, magnesium, sodium, aluminum, silica, carbonic acid, sulphuric acid, chlorine.	.....	Do.
115	Willard's Hotel.....	9	0.254	0.080	no. 15	Traces.	0.133	0.070	Calcium, sodium, magnesium, potassium, aluminum, silica, carbonic acid, sulphuric acid, chlorine.	.....	Do.
116	Cor. 2d and C sts. s. e.	5	0.180	0.060	Traces.	Traces.	0.06601	0.070	Calcium, sodium, magnesium, aluminum, silica, carbonic acid, sulphuric acid, chlorine.	.....	Do.
117	East Capitol and 8th sts.	5	0.178	0.060	Traces.	Traces.	0.133	0.040	Calcium, sodium, magnesium, aluminum, silica, carbonic acid, sulphuric acid, phosphoric acid, chlorine.	.....	Do.

118	Cor. 2d and E sts. s. e. . . .	4	0.183	0.082	0.000.10	0.000.05	0.130	0.040	Calcium, magnesium, sodium, aluminum, silica, iron traces, carbonic acid, sulphuric acid, chlorine.	Good water.
119	6th st., bet. P and O sts.	6 <td>0.368<td>0.081<td>0.000.75<td>0.000.20</td><td>0.183<td>0.080</td><td>Calcium, magnesium, sodium, aluminum, silica, carbonic acid, sulphuric acid, chlorine.</td><td>Bacteria swarmed with lower forms of life; Carthia cause thus miners.</td></td></td></td></td>	0.368 <td>0.081<td>0.000.75<td>0.000.20</td><td>0.183<td>0.080</td><td>Calcium, magnesium, sodium, aluminum, silica, carbonic acid, sulphuric acid, chlorine.</td><td>Bacteria swarmed with lower forms of life; Carthia cause thus miners.</td></td></td></td>	0.081 <td>0.000.75<td>0.000.20</td><td>0.183<td>0.080</td><td>Calcium, magnesium, sodium, aluminum, silica, carbonic acid, sulphuric acid, chlorine.</td><td>Bacteria swarmed with lower forms of life; Carthia cause thus miners.</td></td></td>	0.000.75 <td>0.000.20</td> <td>0.183<td>0.080</td><td>Calcium, magnesium, sodium, aluminum, silica, carbonic acid, sulphuric acid, chlorine.</td><td>Bacteria swarmed with lower forms of life; Carthia cause thus miners.</td></td>	0.000.20	0.183 <td>0.080</td> <td>Calcium, magnesium, sodium, aluminum, silica, carbonic acid, sulphuric acid, chlorine.</td> <td>Bacteria swarmed with lower forms of life; Carthia cause thus miners.</td>	0.080	Calcium, magnesium, sodium, aluminum, silica, carbonic acid, sulphuric acid, chlorine.	Bacteria swarmed with lower forms of life; Carthia cause thus miners.
120	Bet. L and M and 5th and 6th n. w.	5 <td>0.240<td>0.061<td>Traces.<td>0.000.05</td><td>0.181<td>0.060</td><td>Calcium, sodium, magnesium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Good water.</td></td></td></td></td>	0.240 <td>0.061<td>Traces.<td>0.000.05</td><td>0.181<td>0.060</td><td>Calcium, sodium, magnesium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Good water.</td></td></td></td>	0.061 <td>Traces.<td>0.000.05</td><td>0.181<td>0.060</td><td>Calcium, sodium, magnesium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Good water.</td></td></td>	Traces. <td>0.000.05</td> <td>0.181<td>0.060</td><td>Calcium, sodium, magnesium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Good water.</td></td>	0.000.05	0.181 <td>0.060</td> <td>Calcium, sodium, magnesium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td> <td>Good water.</td>	0.060	Calcium, sodium, magnesium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.	Good water.
121	14th st., north of L. n. w.	5 <td>0.213<td>0.060<td>0.000.50<td>0.000.09</td><td>0.150<td>0.80</td><td>Calcium, sodium, magnesium, potassium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Unfit for drinking.</td></td></td></td></td>	0.213 <td>0.060<td>0.000.50<td>0.000.09</td><td>0.150<td>0.80</td><td>Calcium, sodium, magnesium, potassium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Unfit for drinking.</td></td></td></td>	0.060 <td>0.000.50<td>0.000.09</td><td>0.150<td>0.80</td><td>Calcium, sodium, magnesium, potassium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Unfit for drinking.</td></td></td>	0.000.50 <td>0.000.09</td> <td>0.150<td>0.80</td><td>Calcium, sodium, magnesium, potassium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Unfit for drinking.</td></td>	0.000.09	0.150 <td>0.80</td> <td>Calcium, sodium, magnesium, potassium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td> <td>Unfit for drinking.</td>	0.80	Calcium, sodium, magnesium, potassium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.	Unfit for drinking.
122	5th and Langdon Terrace.	99 <td>0.536<td>0.225<td>0.000.05<td>0.000.20</td><td>0.216<td>0.080</td><td>Calcium, magnesium, sodium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Do.</td></td></td></td></td>	0.536 <td>0.225<td>0.000.05<td>0.000.20</td><td>0.216<td>0.080</td><td>Calcium, magnesium, sodium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Do.</td></td></td></td>	0.225 <td>0.000.05<td>0.000.20</td><td>0.216<td>0.080</td><td>Calcium, magnesium, sodium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Do.</td></td></td>	0.000.05 <td>0.000.20</td> <td>0.216<td>0.080</td><td>Calcium, magnesium, sodium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Do.</td></td>	0.000.20	0.216 <td>0.080</td> <td>Calcium, magnesium, sodium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td> <td>Do.</td>	0.080	Calcium, magnesium, sodium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.	Do.
123	5th and Langdon Terrace (reanalysis).	99 <td>0.536<td>0.225<td>0.000.04</td><td>0.000.15</td><td>0.216</td><td>0.140</td><td>Calcium, sodium, iron, aluminum, silica, carbonic acid, magnesium, sulphuric acid, chlorine.</td><td>Do.</td></td></td>	0.536 <td>0.225<td>0.000.04</td><td>0.000.15</td><td>0.216</td><td>0.140</td><td>Calcium, sodium, iron, aluminum, silica, carbonic acid, magnesium, sulphuric acid, chlorine.</td><td>Do.</td></td>	0.225 <td>0.000.04</td> <td>0.000.15</td> <td>0.216</td> <td>0.140</td> <td>Calcium, sodium, iron, aluminum, silica, carbonic acid, magnesium, sulphuric acid, chlorine.</td> <td>Do.</td>	0.000.04	0.000.15	0.216	0.140	Calcium, sodium, iron, aluminum, silica, carbonic acid, magnesium, sulphuric acid, chlorine.	Do.
124	Cor. 6th and Pa. ave. n. w.	4 <td>0.150<td>0.030<td>Slight traces.</td><td>Slight traces.</td><td>0.130</td><td>.....</td><td>Calcium, sodium, magnesium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Very good water.</td></td></td>	0.150 <td>0.030<td>Slight traces.</td><td>Slight traces.</td><td>0.130</td><td>.....</td><td>Calcium, sodium, magnesium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Very good water.</td></td>	0.030 <td>Slight traces.</td> <td>Slight traces.</td> <td>0.130</td> <td>.....</td> <td>Calcium, sodium, magnesium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td> <td>Very good water.</td>	Slight traces.	Slight traces.	0.130	Calcium, sodium, magnesium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.	Very good water.
125	Cor. 10th and S sts. n. w.	2 <td>0.100<td>0.030<td>0.000.04<td>0.000.08</td><td>0.066<td>0.020</td><td>Calcium, sodium, magnesium, potassium, aluminum, silica, carbonic acid, sulphuric acid, iron, chlorine.</td><td>Good water.</td></td></td></td></td>	0.100 <td>0.030<td>0.000.04<td>0.000.08</td><td>0.066<td>0.020</td><td>Calcium, sodium, magnesium, potassium, aluminum, silica, carbonic acid, sulphuric acid, iron, chlorine.</td><td>Good water.</td></td></td></td>	0.030 <td>0.000.04<td>0.000.08</td><td>0.066<td>0.020</td><td>Calcium, sodium, magnesium, potassium, aluminum, silica, carbonic acid, sulphuric acid, iron, chlorine.</td><td>Good water.</td></td></td>	0.000.04 <td>0.000.08</td> <td>0.066<td>0.020</td><td>Calcium, sodium, magnesium, potassium, aluminum, silica, carbonic acid, sulphuric acid, iron, chlorine.</td><td>Good water.</td></td>	0.000.08	0.066 <td>0.020</td> <td>Calcium, sodium, magnesium, potassium, aluminum, silica, carbonic acid, sulphuric acid, iron, chlorine.</td> <td>Good water.</td>	0.020	Calcium, sodium, magnesium, potassium, aluminum, silica, carbonic acid, sulphuric acid, iron, chlorine.	Good water.
126	Cor. 14th and S sts. n. w.	7 <td>0.290<td>0.060<td>0.000.70<td>0.000.40</td><td>0.008<td>0.040</td><td>Calcium, sodium, magnesium, aluminum, silica, carbonic acid, sulphuric acid, chlorine, iron.</td><td>Abominable; unfit for drinking or any domestic purpose.</td></td></td></td></td>	0.290 <td>0.060<td>0.000.70<td>0.000.40</td><td>0.008<td>0.040</td><td>Calcium, sodium, magnesium, aluminum, silica, carbonic acid, sulphuric acid, chlorine, iron.</td><td>Abominable; unfit for drinking or any domestic purpose.</td></td></td></td>	0.060 <td>0.000.70<td>0.000.40</td><td>0.008<td>0.040</td><td>Calcium, sodium, magnesium, aluminum, silica, carbonic acid, sulphuric acid, chlorine, iron.</td><td>Abominable; unfit for drinking or any domestic purpose.</td></td></td>	0.000.70 <td>0.000.40</td> <td>0.008<td>0.040</td><td>Calcium, sodium, magnesium, aluminum, silica, carbonic acid, sulphuric acid, chlorine, iron.</td><td>Abominable; unfit for drinking or any domestic purpose.</td></td>	0.000.40	0.008 <td>0.040</td> <td>Calcium, sodium, magnesium, aluminum, silica, carbonic acid, sulphuric acid, chlorine, iron.</td> <td>Abominable; unfit for drinking or any domestic purpose.</td>	0.040	Calcium, sodium, magnesium, aluminum, silica, carbonic acid, sulphuric acid, chlorine, iron.	Abominable; unfit for drinking or any domestic purpose.
127	Cor. 13th and S sts. n. w.	2 <td>0.080<td>0.016<td>Slight traces.</td><td>Slight traces.</td><td>0.020<td>0.025</td><td>Calcium, magnesium, sodium, potassium, aluminum, silica, carbonic acid, sulphuric acid, chlorine, iron.</td><td>Very good water.</td></td></td></td>	0.080 <td>0.016<td>Slight traces.</td><td>Slight traces.</td><td>0.020<td>0.025</td><td>Calcium, magnesium, sodium, potassium, aluminum, silica, carbonic acid, sulphuric acid, chlorine, iron.</td><td>Very good water.</td></td></td>	0.016 <td>Slight traces.</td> <td>Slight traces.</td> <td>0.020<td>0.025</td><td>Calcium, magnesium, sodium, potassium, aluminum, silica, carbonic acid, sulphuric acid, chlorine, iron.</td><td>Very good water.</td></td>	Slight traces.	Slight traces.	0.020 <td>0.025</td> <td>Calcium, magnesium, sodium, potassium, aluminum, silica, carbonic acid, sulphuric acid, chlorine, iron.</td> <td>Very good water.</td>	0.025	Calcium, magnesium, sodium, potassium, aluminum, silica, carbonic acid, sulphuric acid, chlorine, iron.	Very good water.
128	Cor. 15th and M sts. n. w.	3 <td>0.140<td>0.060<td>Slight traces.</td><td>Slight traces.</td><td>0.100<td>0.040</td><td>Calcium, magnesium, sodium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Do.</td></td></td></td>	0.140 <td>0.060<td>Slight traces.</td><td>Slight traces.</td><td>0.100<td>0.040</td><td>Calcium, magnesium, sodium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Do.</td></td></td>	0.060 <td>Slight traces.</td> <td>Slight traces.</td> <td>0.100<td>0.040</td><td>Calcium, magnesium, sodium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Do.</td></td>	Slight traces.	Slight traces.	0.100 <td>0.040</td> <td>Calcium, magnesium, sodium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td> <td>Do.</td>	0.040	Calcium, magnesium, sodium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.	Do.
129	Virginia ave. bet. 21st and 22d sts. n. w.	7 <td>0.292<td>0.090<td>Slight traces.</td><td>Slight traces.</td><td>0.080<td>0.043</td><td>Calcium, magnesium, sodium, potassium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Do.</td></td></td></td>	0.292 <td>0.090<td>Slight traces.</td><td>Slight traces.</td><td>0.080<td>0.043</td><td>Calcium, magnesium, sodium, potassium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Do.</td></td></td>	0.090 <td>Slight traces.</td> <td>Slight traces.</td> <td>0.080<td>0.043</td><td>Calcium, magnesium, sodium, potassium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Do.</td></td>	Slight traces.	Slight traces.	0.080 <td>0.043</td> <td>Calcium, magnesium, sodium, potassium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.</td> <td>Do.</td>	0.043	Calcium, magnesium, sodium, potassium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.	Do.
130	5th st. bet. P and Q sts. n. w.	7 <td>0.270<td>0.154<td>Traces.</td><td>Traces.</td><td>0.183<td>0.080</td><td>Calcium, sodium, magnesium, aluminum, potassium, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Good water.</td></td></td></td>	0.270 <td>0.154<td>Traces.</td><td>Traces.</td><td>0.183<td>0.080</td><td>Calcium, sodium, magnesium, aluminum, potassium, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Good water.</td></td></td>	0.154 <td>Traces.</td> <td>Traces.</td> <td>0.183<td>0.080</td><td>Calcium, sodium, magnesium, aluminum, potassium, silica, iron, carbonic acid, sulphuric acid, chlorine.</td><td>Good water.</td></td>	Traces.	Traces.	0.183 <td>0.080</td> <td>Calcium, sodium, magnesium, aluminum, potassium, silica, iron, carbonic acid, sulphuric acid, chlorine.</td> <td>Good water.</td>	0.080	Calcium, sodium, magnesium, aluminum, potassium, silica, iron, carbonic acid, sulphuric acid, chlorine.	Good water.
131	R st. bet. New Jersey ave. and 5th st. n. w.	2 <td>0.118<td>0.040<td>Traces.</td><td>Traces.</td><td>0.033<td>0.040</td><td>Calcium, magnesium, sodium, potassium, aluminum, iron, silica, carbonic acid, sulphuric acid, chlorine.</td><td>Do.</td></td></td></td>	0.118 <td>0.040<td>Traces.</td><td>Traces.</td><td>0.033<td>0.040</td><td>Calcium, magnesium, sodium, potassium, aluminum, iron, silica, carbonic acid, sulphuric acid, chlorine.</td><td>Do.</td></td></td>	0.040 <td>Traces.</td> <td>Traces.</td> <td>0.033<td>0.040</td><td>Calcium, magnesium, sodium, potassium, aluminum, iron, silica, carbonic acid, sulphuric acid, chlorine.</td><td>Do.</td></td>	Traces.	Traces.	0.033 <td>0.040</td> <td>Calcium, magnesium, sodium, potassium, aluminum, iron, silica, carbonic acid, sulphuric acid, chlorine.</td> <td>Do.</td>	0.040	Calcium, magnesium, sodium, potassium, aluminum, iron, silica, carbonic acid, sulphuric acid, chlorine.	Do.

aOr parts per 1,000,000.

bOr 21.3 parts per 100,000.

cOr 16 parts per 100,000.

eVery hard water.

fFrom bad origin, fifth, or average.

gHard water.

hDecreased .01 million part.

iDecreased .05 million part.

jIncreased 0.069; bad origin.

a Decreased 61 million part.
 b Decreased 65 million part.
 c Increased 0.060; bad origin.

e Very hard water.
 f From bad origin, filth, or sewage.
 g Hard water.

a Or parts per 1,000,000.
 b Or 21.3 parts per 100,000.
 c Or 16 parts per 100,000.
 d Or 6 parts per 100,000.

Analysis of pump water in the District of Columbia—Continued.

Number.	Location.	Degrees of hardness.	Solid residue.	Organic matter and volatile.	Free ammonia.	Albuminoid ammonia.	Nitrates, nitrites.	Chlorine.	Mineral substances.	Microscopic examinations.	Opinion.
132	7th st. bet. M and N sts. n. w. (reanalysis).	53	0.200	0.080	Traces.	0.000.04	0.0.083	0.060	Calcium, magnesium, potassium, iron, aluminum, silica, carbonic acid, sulphuric acid, chlorine.	.....	No injurious lives visible.
133	21st st. and New York ave. n. w.	e 11	0.540	0.250	Traces.	0.000.05	0.233	0.140	Calcium, sodium, magnesium, iron, aluminum, silica, carbonic acid, sulphuric acid, chlorine.	Infusoria	Still usable, but in great danger of pollution.
134	O st. bet. 4th and 5th sts. n. w.	7	0.306	0.103	0.000.18	0.000.02	0.160	0.130	Calcium, magnesium, potassium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.	Flagellata, monadina, euploata.	Still usable, but in very great danger of pollution.
135	Cor. 12th st. and Massachusetts ave. n. w.	5	0.360	0.030	Traces.	Traces.	0.120	0.060	Calcium, magnesium, sodium, iron, aluminum, silica, chlorine, carbonic acid, sulphuric acid.	No injurious organisms lives visible.	Still good water.
136	Cor. 1st and K sts. n. e. . .	4	0.200	0.108	Traces.	Traces.	0.133	0.040	Calcium, magnesium, sodium, potassium, iron, aluminum, silica, carbonic acid, sulphuric acid, chlorine.	.....	Good water.
137	Delaware ave. and H st. n. e.	9	0.514	0.272	0.000.20	0.000.06	0.166	0.120	Calcium, magnesium, sodium, aluminum, silica, iron, carbonic acid, sulphuric acid, chlorine.	Bacteria, vibris, keronia, euploata.	Unfit for drinking.
138	19th st. and Boundary. n. w.	4	0.200	0.090	Traces.	0.000.03	0.116	0.030	Calcium, magnesium, sodium, aluminum, silica, carbonic acid, sulphuric acid, chlorine.	.....	Very good water.

^a Increased since last year .03 part per million.^b Increased since last year 23 parts per million.^c Hard water.

SANITARY SURVEY BY SQUARES.

It affords me much pleasure to be able to present the following report in detail showing the condition of each square in the two cities. The data here collected and exhibited will prove of much value to the student or statistician inquiring into the sanitary condition of the District of Columbia. The labor involved in collecting this information was performed by the corps of sanitary inspectors during the winter months of 1880-'81. Each square is given by number, and a glance gives you the number and kind of houses thereon, those premises having houses and yards sewered, the number of water-closets, privy-boxes, yards paved, slaughter-houses, cow stables or yards, and hog-pens. In a comparative position are given the deaths occurring on each square during the year, divided according to color, together with a separate statement of deaths from the principal zymotic diseases. Taking this information in connection with that given in the "report of sanitary survey" in my last annual report, I think that they form the most full, complete, and concise sanitary history yet given of any city in this country.

By referring to the totals we find that there are 30,474 houses in the two cities, 15,549 brick, and 14,925 frame; of this number 10,066 are sewered; 13,672 have yards sewered. There are 14,114 water-closets, and 16,492 yards paved. The privy-boxes number 15,886; there are 369 cow-yards or cow-stables, 17 slaughter-houses, and 11 hog-pens within the boundary lines.

A large addition to the value of the report would have been made by securing the population of each square, but our limited time and force would not admit of the attempt at taking such a census. The average number of occupants to each house, according to census of 1880, is 5.25.

Of the total number of squares, 179 were found defective in drainage; 30 below grade; 32 having alley in insanitary condition; 19 containing stagnant water, and 37 having houses in insanitary condition.

According to the assessors' census of 1878, the houses within the limits of the two cities at that time numbered 25,656. According to this showing our buildings have increased 4,818 during the past three years.

WEST WASHINGTON (FORMERLY GEORGETOWN).

Number of square.	Houses.			Houses sewered.	Water-closets.	Yards sewered.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog-pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.
	Brick.	Frame.	Total.										White.	Colored.	Total.	
1	1	2	3													Fair.
2	1	1	2													Fair.
3	2	6	8		1	1										Fair.
4	9	3	12		2											
5	18		18													Fair.
6	2		2													
7																
8																
9																
10																
12	4	5	9			1	1	2								Fair.
13	6	4	10			1	1	4		1			2	1	3	Poor.
14	17	13	30	2	2		6	24		1						Poor.
15	6	7	13					10								
16	13	13	26		7	7	1	25					3		3	Poor.
17	16	5	21					15					3		3	Bad.
18	15	15	30				7	24				1	1	1	2	

* Coal wharf.

392 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

WEST WASHINGTON (FORMERLY GEORGETOWN)—Continued.

Number of square.	Houses.			Houses sewered.	Water-closets.	Yards sewered.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog-pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.
	Brick.	Frame.	Total.										White.	Colored.	Total.	
19	3	22	25				1	17					1		1	Bad.
20	25	9	34	1	2	3	16	32				2	4	4	8	Bad.
21	13	9	22					21				1	2	1	3	Poor.
22	8	8	16					12				1	1		1	Poor.
23	1	3	4					2								Poor.
24	6	7	13	6	6		3	4								
S. 24	1	1	2													
25	9	4	13	2	3	3	4	2					1	1	2	Fair.
26	19	12	31	6	9	2	14	21				1	3		3	Fair.
27	24	8	32	2	14	14	18	14				1	2	3	5	Fair.
28	23	3	26	13	13	12	20	13				2	4		4	Fair.
29	25	23	48		13		5	15					1	2	3	Fair.
30	32	11	43	9	21	6	8	16					2		2	Fair.
31	1	10	11					10								Poor.
32	4	13	17	1	1			8				1	2		2	Poor.
33	3		3				3	2				1	2		2	Good.
34	1		1									1	1		1	Good.
E. 35	1	3	4	1	1		1	1								Good.
W. 35	3	5	8					7							2	Fair.
36	6	12	18	1	4	3	5	9								Tolerable.
37	40	20	60	4	20	14	10	23				1	5		5	Fair.
38	49	17	66	26	48	30	36	18				2	3	3	6	Good.
39	36	19	55	32	34	15	28	18		2			5		5	Good.
40	13	1	14	8	13	12	13	1					1	1	1	Fair.
41	19	11	30	17	30	27	22					2	2	1	3	Fair.
42	18	23	41	8	10	22	21	30					1	1	2	Not very good.
43	13	5	18	13	16	9	9	2					1	1	2	Good.
44	5	21	26		3	3	8	22				1	2	2	4	Fair.
W. 44	2	2	2				1									Fair.
45	2	5	7	2	2		2							1	1	Fair.
46		5	5					5						1	1	Tolerable.
47	22	21	43	1	19	10	12	14				1	4	1	5	Fair.
48	5	12	17	5	5	1	10	12		3			1	1	1	Fair.
49	21	5	26	15	15		23	12				1	3	1	4	Good.
50	9	17	26	5	8	7	13	16		2						Bad.
51	13	1	14	1	1		8	12					1		1	Fair.
52	1	25	26		1		3	25		3			1		1	Poor.
53																
154																
55	13	7	20				4	19		4						Poor.
56	4	6	10	2	1	1	8	6					1	1	1	Good.
57	15	11	26	4	7	9	10	15				1	1	1	2	Not very good.
58	15	3	18	14	14		11	6						2	2	Very good.
59	8	4	12	6	6		12	6				1	1		1	Very good.
60	20	12	32	9	13	2	13	12					1		1	Fair.
61	18	10	28	9	11		20	12		2			5		5	Fair.
62	17		17	17	17		17						2		2	Excellent.
63	7	7	14	5	8	6	13	5					2		2	Fair.
64	10	13	23	8	17	17	21	4		1			8	1	4	Fair.
65	18	4	22	2	6	6	6	15				1	2		2	Fair.
66	1	12	13					13						5	5	Bad.
67	2	12	14					13		2				1	1	Fair.
68	5	27	32	3	6	5	19	26		1		1	2	5	7	Poor.
69	9	30	39	2	5	14	18	31					1	3	4	Poor.
70	8	10	18	2	3	3	7	8								Good.
71	12	5	17	5	5	4	6	12					1	1	2	Good.
72	16	4	20	11	11	7	10	5		1			3		3	Good.
73	31	24	55	12	12	3	10	42					4	1	5	Bad.
74	10	17	27	10	10	8	15	17						1	1	Good.
75	14	12	26	2	7	11	14	20					3		3	Fair.
76	5	21	26		1	16	18	8		4						Fair.
77	3	20	23				6	18		7			2		2	Poor.
78																
*79																
*80																
*81																
*82																
83	13	3	16	3	4	1	11	12		1		1	2		2	Good.
84	18	23	41		5		18	37		1		1	2	3	5	Defective sewerage.
85	17	16	33	8	8		17	27								Poor.
86	35	14	49	24	29	10	38	15		1		1	3	3	6	Fair.

* Coal wharf.

† Georgetown College.

; Vacant.

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 393

WEST WASHINGTON (FORMERLY GEORGETOWN)—Continued.

Number of square.	Houses.			Houses sewered.	Water-closets.	Yards sewered.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog-pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.
	Brick.	Frame.	Total.										White.	Colored.	Total.	
87	30	6	36	29	29	13	35	5					2		2	Good.
88	6	5	11	10	12	11	12	1					1	1	2	Fair.
89	7	12	19	4	4	13	13	16					1	1	2	Fair.
90	8	18	26	1	2	1		16						4	4	Poor.
91	4	14	18					18				1	1	3	3	Not very good.
92	2	13	35	2	2		4	32					2	2	4	Poor.
93	9	37	46				5	45								
94	10	21	31	6	8	9	12	21							4	
95	1	1	2					1					1		1	
96	1	14	15					14		1		1		1	1	
97	2	12	14				3	14					2	2	2	Fair.
98	1	1	2	1	1		1	1					1	1	2	Good.
99	8	4	12	10	11	11	1	1					1		1	Good.
100	6	17	23	13	15	17	2	2								Good.
101	16	7	23	12	12	10	21	12					1		1	Good.
102	11	11	22	5	5	9	4	4					2		2	Good.
103	13	18	31	4	14	9	16	16					1	1	1	Fair.
104	6	11	17	9	9	9	15	15		1			1		1	Poor.
105	20	20	40				20	40		1				3	3	Fair.
106	2	5	7				2	7					1	1	2	Fair.
107		7	7					7								Good.
108	1	42	43			1	16	41		1			1	3	4	Fair.
109	6	9	15	4	4	3	6	11				1		1	1	Fair.
110	20	45	65	18	20	14	21	43		2		2	1	5	6	Fair.
111	5	5	10	5	5		5	5					1		1	Good.
112	14	4	18	13	13		11	5		1			1		1	Good.
113	2	1	3	2	2			1		1						Good.
114	2		2	1	2	1	2						1		1	Good.
115	3		3	2	2									1	1	Good.
116	4	26	30					25		2			2	3	5	Poor.
117	3	28	31				7	27		2						Drainage defective.
118																
119	1	5	6		1		5	6								Good.
120	1	1	2	1	1								1		1	Good.

WASHINGTON.

1	18	13	31	....	1	17	17	29								
2	1	1	2													
3		1	1													
4	9	12	21	5	5	13	13					1	1		1	
5	6	1	7	1	6	6	6	1								
6	22	26	48	5	16	23	23	33					5	2	7	
7	10	10				4	3	4					1		1	
8	2	2	2													
9	4	2	6			1	1	1								
10	4	4	4				1	1								
11		1	1					1								
12	6	9	9				9						3	1	4	
13	6	5	11				10	11					2		2	
14	1	4	5											1	1	
15	3	26	29				3	29					1	3	4	
16	3	3	6	3	3	3	1	3						1	1	
17	8	5	13				1	12					1		1	
18	10	18	28	5	15	16	24	12		1			3	1	4	
19	15	38	53	3	10	10	28	42		2		3	1	5	6	
20	17	16	28	2	7	7	18	21					1		1	
21		1	1													
22	3		3			1	1	1								
23	2	9	11	1	2	2	2	8								
24	17	17					17						2		2	
25	1	2	3													
26	3	2	5			2	5									
27	1	1	1				1									

* Coal wharf.

† Vacant.

394 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

WASHINGTON—Continued.

Number of square.	Houses.			Houses sewerd.	Water-closets.	Yards sewerd.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog-pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.
	Brick.	Frame.	Total.										White.	Colored.	Total.	
24	14	43	57					19	56				3	3	6	
25	2	1	3	2	2	2		2	1				1		1	
26	9		9	9	9	9		2					1		1	
27	15	1	16	14	14	15	14	2					1		1	
28	15	43	58	7	12	11	22	43		2		1	5	6	12	
29	2	12	14		1	1	6	12								
30	8	13	21	1	1		12	20					1	1	2	
31		28	28	5	5	5	2	24				1	1	2	3	
32	7	24	31			2	16	29				1	2	3	5	
33		16	16				3	16						5	5	
Res. 4	4		4	1	1		2									
35																
36	14	28	42	9	9		8	33		8		1	2	3	5	Very bad condition; without sewerage.
37	14	43	57	3	12	12	22	45				1	2	4	6	
38	6	12	18	3	6	5	8	10							2	
39	1		1	1	1	1	1									
40	4	13	17	7	14	16	16	3				1	1		1	
41	2	42	44	1	7	28	32	36				1	2	2	4	
42	3	34	37	8	15	23	18	20					3	1	4	
43	10	10	20	7	9	14	17	10				1	2		2	
44	2	8	10				5	10								
47																
48	1	2	3					2	1							
49		4	4			1	3	4	2							
50	2	6	8		2	2	4	4								
51	21	39	60		4	6	20	50		2		2	1		1	
52	14		14	14	14	14	14						4	4	8	
53													1		1	
54	7	28	35	8	10	21	32	27					2	2	4	
55	14	32	46	14	24	35	36	23				1	2	2	4	
56	5	47	52	4	10	26	33	41		2			2	3	3	
57	10	2	12	10	10	10	10	3								
58	2	1	3	1	1	1	2	1								
59	2	27	29				2	29				1		2	2	
60	4	8	12				4	12						1	1	
61	1	6	7					7								
62		15	15				1	15		2		1	1	2	3	
63		3	3					3				1	1	1	1	
65	1	22	23					23				2	1	8	9	
66	1		1		1	1	1					1	1		1	
67	1	11	12				1	11				1		1	1	
68	2	16	18				8	17				1	2	2	4	
69		20	20					20				1		2	2	
70	5	29	34	3	6	6	2	28					2	3	5	
71		2	2					2								
72	8	41	49	12	12	19	10	37					2	1	3	
73	16	21	37	8	11	24	26	23		1		2	2	3	5	
74	26	23	49	7	17	20	22	31				1	1	4	5	
75	34	22	56	24	39	43	40	17				1	4	1	5	
76	9	26	35	17	16	14	8	19					2		2	Good.
77	34	15	49	22	35	39	48	17				1	6	4	10	
78	24	6	30	22	26	22	23	8				1	1		1	Good.
79	27	9	36	18	23	27	13					1			1	Fair.
80	12	26	38	12	12	14	26		1			1	2	2	4	Fair.
81	15	18	33	1	1	2	3	31		1		1		6	6	Fair.
82		1	1					1		1						Fair.
83	9	2	11					11		1				1	1	Fair.
84	1	11	12					12						3	3	Fair.
85	2	28	30	2	4	9	8	26						1	1	Not very good.
86	34	8	42	28	33	33	30	8					2		2	Very good.
87	2	9	11		33			11				1		1	1	Fair.
E. 87		14	14					14				2		3	3	Drainage bad.
E. 88	5	26	31					24		2		4	5	2	7	Not very good.
89		1	1					1								
90	1	18	19	1	1	6	3	18					1		1	Good.
91		1	1					1								Good.
92		2	2					2		2						Good.
93																
94	7	5	12	5	9	11	6	3					2		2	Good.
95																

* Vacant.

WASHINGTON—Continued.

Number of square.	Houses.			Houses sewered.	Water-closets.	Yards sewered.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog-pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.
	Brick.	Frame.	Total.										White.	Color d.	Total.	
96	6	6	12	6	12	6	6									Good.
97	10	8	18	9	11	25	28	37				1	3	5	8	Good.
98	22	25	47	11	11	31	7	59				4	2	17	19	Fair.
99	100	63	163	6	14	31	7	59		3		4	2	17	19	Drainage defective.
100	101	39	140	8	47	38	35	38	16			1	4		4	Very good.
101	102	27	129	9	36	26	22	30	28	12		1		1	1	Very good.
102	103	16	119	5	21	21	20	19	19	3				1	1	Very good.
103	104	11	121	22	8	11	9	12				1	1	4	5	Drainage defective.
104	105	32	137	17	18	3	2	3	16			3	1	8	9	Drainage defective.
105	106	26	132	9	35	23	23	25	25	12		1	2		2	Very good.
106	107	25	132	34	59	18	16	13	11	41		1	2	5	7	Very good.
107	108	4	38	38	13	7	2	38					3	3	6	Bad.
108	109	1	15	16	16	11	16	14	5	3			1		1	Good.
109	110	3	6	9	7	6	8	5	3				1		1	Good.
110	111	6	3	9	6	6	6	7	3		1		1		1	Very good.
111	112	11	11	11	11	11	11	11					1		1	Good.
112	113	18	30	48	20	18	25	13	30			2	1	5	6	Defective sewerage.
113	114	43	36	79	21	21	44	11	58			1	2	10	12	Bad.
114	115	23	4	27	19	21	18	19	5				1	1	2	Good.
115	116	18	8	26	18	18	13	14	6			1	1		1	Good.
116	117	16	12	28	19	20	20	21	8			1	6		6	Good.
117	118	14	14	13	13	13	13					2	2		2	Good.
118	119	7	23	30	9	12	15	18	18			1		2	2	Drainage defective.
119	120	6	8	14	4	5	4					1	1	2	3	Good.
120	121	1	12	13			1	12		1		1	1	1	2	Drainage defective.
121	122	1	1	1				1								Bad.
122	123	25	19	44	27	30	25	21	15			2	3	1	4	Good.
123	124	45	7	52	44	48	49	47	5				3	1	4	Good.
124	125	3	3					3								Bad.
125	126	6	29	35	4	6	6	10	29		2		1	2	3	Good.
126	127	4	31	35	3	2	4	3	32				1	1	1	Good.
127	128	1	24	25	2	20	15	12	5		1	2	1	5	6	Fair.
128	129	15	9	24	20	20	19	19	4		1		3		3	Fair.
129	130	1	1	2	1	1	1	1	1							Defective drainage.
130	131	5	5	5	5	5	5	5								Good.
131	132	9	9	9	9	9	9	9				1	1		1	Excellent.
132	133	12	12	12	12	12	12						1		1	Good.
133	134	41	58	99	26	30	49	23	64			1	1	7	8	Bad.
134	135	29	7	36	24	23	25	19	9				1	3	4	Good.
135	136	21	4	25	21	21	21	16	4			2	2		2	Good.
136	137	5	2	7	5	5	5	4	1			2	2		2	Good.
137	138	19	19	1				19				3		4	4	Defective drainage.
138	139	3	3					3								Bad.
139	140	8	8					3								Bad.
140	141	29	29	9	9			20								Bad.
141	142	1	10	11	3	3		11	8							Bad.
142	143	11	25	36	12	12	12	25					3	3		Bad.
143	144															
144	145															
145	146	1	1	1	1	1	1	1								Fair.
146	147	16	13	29	17	16	16	16	13				2	1	3	Good.
147	148	6	19	25	6	7	9	7	18				2		2	Fair.
148	149	19	19	19	19	19	19	19				1	2		2	Good.
149	150	4	2	6	5	5	4	4	1			1	2		2	Good.
150	151	25	15	40	20	23	17	16	17				1	2	3	Bad.
151	152	16	14	14	14	14	14						1	2	3	Fair.
152	153	26	48	74	16	18	17	10	51				2	8	10	Drainage defective.
153	154	28	28	28	28	28	28							1	1	Good.
154	155	12	2	14	14	14	14						2		2	Good.
155	156	37	9	46	32	38	32	26	8			1	6		6	Drainage defective.
156	157	19	19	19	19	19	19						3		3	Good.
157	158	30	2	32	24	27	23	4				1	2		2	Good.
158	159	31	27	58	29	25	17	1				1	1		1	Good.
159	160	25	8	33	21	23	19	10					1	5	6	Plumbing and sewerage defective.
160	161	3	18	21		4	8	4	18				2	2		Bad.

* Vacant.

396 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

WASHINGTON—Continued.

Number of square.	Houses.			Houses sewered.	Water-closets.	Yards sewered.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.	
	Brick.	Frame.	Total.										White.	Colored.	Total.		
172	3	12	15	2	2	3		13						3	3	Bad.	
173	2		2					2								Bad.	
S. 173	1		1					1								Fair.	
174	1	18	18	3	2	2		16				1	1	1	2	Not good.	
175	1		1		1											Defective drainage.	
176	12	6	18	8	5	8		10						1	1	Defective drainage.	
N. 177	15		15	15	15	9	1									Defective drainage.	
S. 177	18	5	23	18	18	1		5						1	1	Good.	
178														1	1		
179	33	12	45	15	28	28	14	17						2	2	Fair.	
180	29	36	65	45	58	59	54	5						2	2	Good.	
181	8	8	16	8	9	6	4	7							1	Fair.	
S. 181	16	13	29	7	11	14	7	18						1	3	Defective drainage.	
182	13	15	28	14	15	18	7	12						1	1	Defective drainage.	
Triangle	1	1	2	1	1	1	1	1								Good.	
Triangle	1	1	2	1	1	1	1	1								Excellent.	
183	31	50	81	23	16	25	11	60						2	4	6	Bad.
184	17	15	32	6	13	18	7	19									Good.
185	9	3	12	9	9	9	9	1				1	1		1	Good.	
186	2		2	2	2	2	2							1	1	Good.	
188																	
* 189																	
190	54		54	54	54	54	54							1	1	Good.	
191	29		29	29	29	29	29							1	1	Bad.	
192	10	1	11	10	10	10	10	1								Drainage defective.	
193	33		33	33	33	22	23							1	1	Good.	
194	28	19	47	34	37	39	38	10						1	3	4	Good.
N. 195	1	1	2	1	1	1	1	1									Good.
S. 195	12	13	25	12	19	23	9	6						1	1	Good.	
Triangle	1		1	1	1	1	1										Good.
Triangle	5		5	5	5	5	5							1	1	Good.	
196	3	24	27	3	5	11	8	23						2	4	6	Good.
197	16	70	86	11	18	30	17	66				1	2	15	17	Bad.	
198	15	21	36	12	18	25	23	18				1		5	5	Good.	
199	31	1	32	30	30	30	29	2				2	3	1	4	Good.	
200	11		11	11	11	11	5							1	1	Good.	
202	9	2	11	6	8	5	5	3		1					1	1	Good.
203	6	1	7	7	7	7	6	4									Good.
204	10		10	10	10	10	8							1	1	Defective drainage.	
205	15	10	25	15	16	12	10	10				1	1	2	3	Defective drainage.	
206	44	16	60	55	55	24	23	5				2	3	3	6	Good.	
207	47	11	58	49	53	48	48	6						2	2	4	Good.
208	52		52	52	52	33	50	25				1	9		9	Good.	
209	54	70	124	22	40	59	43	84		1				3	9	12	Very bad.
210	14	15	29	17	17	17	13	11						2	1	3	Good.
211	39	22	61	24	26	39	24	35				1	2	6	8	Bad.	
212	34	8	42	35	34	36	33	8						2	5	7	Good.
213	10	8	18	12	16	14	12	2									Good.
214	6	46	52	2	8	17	9	24				2	2	7	9	Fair.	
215	8	6	14	11	11	10	6	3						1		1	Good.
216	12	4	16	10	14	15	10	2									Good.
217	23		23	23	23	17	17							2	1	3	Good.
218	25	13	38	33	35	36	23	2									Good.
219	11	4	15	12	13	12	11	1									Good.
220	17	12	29	18	21	18	20	9						1		1	Good.
221	19	4	23	18	19	18	17							1		1	Good.
222	20	1	21	20	20	18	18	1							1	1	Good.
223	17	3	20	16	16	10	10	3						2	1	3	Good.
224	19	1	20	18	18	12	12	3				1	1		1	Good.	
225	11		11	11	11	10	10							1	1	1	Good.
226	15	5	20	15	17	10	4	2						1	3	3	Bad.
227	14	14	28	13	13	17	16	15				1	2		2	Good.	
228	14	10	24	3	16	16	16	8									Bad.
229	2	7	9	1	2	1	2	7							1	1	Bad.
230	1	7	8			1		6						1	3	4	Fair.
231	4	9	13	1	1	1	5	12		1							Good.
232	1		1			1	1										Good.
233		3	3					3									Fair.
234	60	5	65	39	40	46	28	25		1		2	4	3	7	Fair.	
* 235																	Defective drainage.
236	27	13	40	24	27	26	32	12				2	7		7	Defective drainage.	
237	5		5	5	5	5	5							2		2	Defective drainage.

* Vacant.

WASHINGTON—Continued.

Number of square.	Houses.			Houses sewerd.	Water-closets.	Yards sewerd.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog-pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.	
	Brick.	Frame.	Total.										White.	Colored.	Total.		
238	53	21	74	28	35	18	25	38				1	2	8	10	Defective drainage.	
239	26		26	26	26	13	21					1	1	1	1	Defective drainage.	
240	63		63	62	62	33	62	1				12	5	5	5	Good.	
241	36	7	43	36	36	32	29	7				2	3	1	4	Good.	
N. 242	2	8	10	9	10	10	9					1	1	1	1	Good.	
S. 242	28	2	30	27	27	27	27	1				1	1	1	1	Good.	
243	24	7	35	24	34	34	28	1				1	4	1	4	Good.	
Triangle	1															Excellent.	
245	32	5	37	27	32	31	32	5					2	2	4	Good.	
Triangle	3	3	6	1	5	4	1									Good.	
247	41	26	67	45	47	51	52	20				1	4	2	6	Bad.	
248	32	8	40	33	33	33	30	7				1	6	1	7	Good.	
250	45	12	57	47	49	46	44	8				1	10	1	10	Very good.	
251	6		6	6	6	5	6						1	1	1	Excellent.	
252	60	10	70	47	54	40	40	17				1	2	2	4	Very good.	
253	41	8	49	41	43	41	39	6				2	2	2	4	Very good.	
254	44	44	88	44	31	36	20	19	5			2	5	1	6	Bad.	
255	14	2	16	2	11	9	8	4					1	2	3	Good.	
256	11	10	21	9	14	10	6	7								Not very good.	
257	9	24	33	7	10	28	15	22				1	1	2	3	Defective drainage.	
258	26	19	45	8	19	13	2	25				1	4	4	8	Bad.	
259	2	2	4		1			1								Fair.	
260	1		1	1	1											Fair.	
263	32	21	53	34	36	51	45	20		1			7	1	7	Fair.	
264	33	24	57	48	46	50	48	11				1	4	1	4	Good.	
265	18	18	36	16	16	26	26	20				2	5	1	5	Fair.	
266	7	13	20	8	8	12	12	12				1	1	1	1	Fair.	
267	5	16	21	3	3	12	18	18				1	9	1	10	Fair.	
268	5	19	24	10	10	11	12	14					1	1	1	Fair.	
269	4		4	1	1	2	3	3								Fair.	
* 270																	
271	3	3	6					3				1	2	1	2	Defective drainage.	
272	1	1	2	1	1	1	1							1	1	Good.	
273	2	2	4			2	4							1	1	Bad.	
274	46	2	48	18	18	18	30					1	6	6	6	Fair.	
275	12	14	26	9	10	10	12	16								Defective drainage.	
276	26	12	38	25	25	27	13						1	7	8	Defective drainage.	
Triangle	15	24	39	7	7	12	32					2	1	7	7	Fair.	
277	6		6	6	6	6	6						1	1	1	Good.	
278	18	12	30	17	25	26	26	5					2	2	2	Defective drainage.	
279	19	20	39	13	23	28	28	16								Very good.	
280	29	8	37	29	36	33	37	1					4	1	5	Very good.	
281	30	22	52	34	42	42	29	10						4	4	Defective drainage.	
282	9	20	29	8	11	17	12	18					1	4	5	Good.	
283	19	6	25	17	20	19	20	5				1	1	3	4	Good.	
284	15	2	17	16	17	17	17						6	1	6	Good.	
285	30	2	32	29	30	30	31	2					1	1	1	Excellent.	
286	26	14	40	24	33	36	19	9				1	6	3	9	Bad.	
287	20	6	26	19	25	15	11									Very good.	
288	48	13	61	41	52	49	47	11				1	7	1	8	Defective drainage.	
289	35	5	40	30	33	27	20	7				1	2	2	2	Defective drainage.	
290	38	6	44	33	39	38	33	5				1	1	2	3	Defective drainage.	
291	29	1	30	24	26	23	21	3								Bad.	
292	19	2	21	14	21	9	3									Defective drainage.	
293	43	9	52	16	38	31	29	13					2	3	5	Bad.	
294	11	11	22	6	11	5							2	2	2	Very good.	
295	3	1	4	2	2			1								Very good.	
296	25	44	69	39	39	50	48	30		1		4	6	1	7	Fair.	
297	15	35	50	28	28	29	33	22						1	1	Fair.	
298	5		5			5	5									Good.	
299	14	9	23	5	5	9	10	18				1	1	1	1	Good.	
300	1		1					1					1	1	1	Fair.	
302	3	42	45	1	4	14	11	41					1	4	5	Bad.	
303	15	20	35	4	17	22	12	18						2	2	Good.	
304	5	1	6		2	2	1	4								Defective drainage	
305	12	12	24	2	5	8	5	19					2	2	2	Bad.	
306	48	4	52	35	35	13	14	8				1	2	1	2	Good.	
307	3	14	17	1	1			16				1	2	1	3	Bad.	
308	18		18	18	17		18						1	1	1	Good.	
309	6	39	45	1	3	7	6	42				4	1	9	10	Bad.	
310	13	5	18	5	5	5	5	14						2	2	Fair.	
311	3	3	6					3								Good.	

* Vacant.

398 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

WASHINGTON—Continued.

Number of square.	Houses.			Houses sewerd.	Water-closets.	Yards sewerd.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog-pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.
	Brick.	Frame.	Total.										White.	Colored.	Total.	
312	10	..	10	10	10	10	10	..	..	..	..	..	1	2	1	Good.
313	18	22	40	17	18	13	17	20	..	..	..	1	2	8	10	Good.
314	20	..	20	20	20	20	20	5	..	..	..	1	2	..	2	Good.
315	20	10	30	23	24	24	26	5	..	..	..	..	2	..	2	Good.
316	27	3	30	27	25	27	27	5	..	..	..	..	2	2	2	Good.
317	12	26	38	11	16	24	21	19	..	..	..	2	3	5	8	Defective drainage.
318	14	5	19	16	17	19	19	3	..	..	..	..	2	..	2	Good.
319	32	14	46	35	44	41	45	1	..	..	..	..	5	..	5	Good.
320	25	4	29	21	24	19	18	1	..	..	..	..	2	..	2	Defective drainage.
321	28	2	30	23	26	20	16	2	..	..	..	1	6	2	8	Good.
322	28	..	28	11	18	17	10	10	..	..	..	..	..	..	..	Defective drainage.
323	17	..	17	5	9	10	6	7	..	..	..	..	..	1	1	Bad.
324	18	1	19	5	9	6	7	8	..	..	..	..	3	..	3	Defective drainage.
325	5	13	18	10	10	14	16	8	..	..	..	..	2	..	2	Good.
326	13	4	17	17	17	17	17	17	..	..	..	..	..	..	..	Very good.
327	14	16	30	24	24	24	26	8	..	..	..	..	3	..	3	Good.
328	5	7	12	3	3	10	10	9	..	..	..	1	3	..	3	Fair.
329	1	3	4	..	..	..	..	4	..	..	..	..	..	..	..	Good.
*330	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
331	4	30	34	..	..	..	..	34	..	..	..	..	..	5	5	Bad.
332	8	8	16	1	1	..	..	16	..	..	..	..	1	3	4	Defective drainage.
333	10	25	35	9	14	26	11	21	..	..	..	3	4	3	7	Fair.
334	6	7	13	7	7	1	..	6	..	..	..	..	..	..	..	Fair.
Triangle	7	7	14	7	11	11	8	3	..	..	..	..	1	..	1	Good.
335	16	23	39	20	39	37	32	..	..	..	..	1	..	2	2	Good.
336	3	18	21	2	7	9	3	14	..	..	..	1	..	5	5	Defective drainage.
Triangle	1	4	5	..	..	..	..	5	..	..	..	..	..	..	..	Bad.
337	6	18	24	4	12	12	12	12	..	..	..	1	1	4	5	Defective drainage.
338	28	9	37	13	31	31	28	4	..	..	..	..	1	..	1	Good.
339	25	1	26	26	26	22	25	4	..	..	..	..	1	..	1	Good.
340	29	32	61	28	29	28	22	32	..	..	..	1	5	4	9	Good.
341	23	14	37	18	27	30	28	9	..	..	..	..	1	2	3	Good.
342	24	4	28	22	28	22	21	..	..	..	..	..	5	..	5	Good.
343	14	19	33	9	16	13	11	17	..	..	..	1	1	1	2	Defective drainage.
344	26	4	30	27	30	27	27	..	..	..	..	..	..	2	2	Good.
345	28	12	40	33	35	32	30	4	..	..	..	1	6	2	8	Good.
346	16	..	16	10	12	9	7	4	..	..	..	..	1	..	1	Good.
347	30	..	30	23	29	22	14	1	..	..	..	2	4	..	4	Good.
348	31	..	31	27	29	25	24	3	..	..	..	..	5	..	5	Not good.
349	14	1	15	8	11	4	4	4	..	..	..	2	4	..	4	Defective drainage.
N. 350	15	3	18	11	11	..	1	6	..	..	..	..	1	..	1	Defective drainage.
351	6	2	8	6	6	6	6	2	..	..	..	..	..	..	..	Good.
351	15	12	27	9	9	9	9	21	18	..	..	1	4	1	5	Bad.
352	11	..	11	11	11	11	11	1	..	..	..	..	..	..	..	Good.
353	26	21	47	16	16	24	39	31	..	..	..	..	3	3	6	Defective drainage.
354	7	14	21	10	10	14	21	11	..	..	..	..	1	..	1	Fair.
355	7	1	8	3	3	4	4	6	..	..	..	1	1	..	1	Defective drainage.
356	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
357	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
358	4	21	25	5	4	5	10	21	..	..	..	..	2	7	9	Bad.
359	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	Good.
360	2	..	2	2	2	2	2	..	..	..	..	..	..	1	1	Good.
361	29	12	41	36	36	36	37	5	..	..	..	3	7	1	8	Good.
362	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
363	34	1	35	34	34	34	34	1	..	..	..	3	3	3	6	Good.
364	59	9	68	38	40	52	53	27	..	..	..	..	1	10	11	Fair.
365	86	1	87	77	85	85	78	22	..	..	..	2	4	..	4	Good.
366	64	35	99	64	64	64	64	2	..	..	..	..	4	1	5	Good.
367	28	53	81	14	35	37	37	42	..	..	..	3	5	15	20	Fair.
368	65	47	112	20	44	47	55	71	..	..	..	3	2	14	16	Bad.
369	59	20	79	56	64	74	75	15	..	..	..	3	5	3	8	Good.
370	13	29	42	15	31	39	37	11	..	..	..	..	2	1	3	Good.
371	27	4	31	23	30	30	30	..	..	..	..	..	2	1	3	Good.
372	17	16	33	15	24	25	21	5	..	..	..	1	1	3	4	Good.
373	37	16	53	42	47	49	50	6	..	..	..	..	4	..	4	Good.
374	51	11	62	41	54	52	57	9	..	..	..	2	9	..	9	Good.
375	52	3	55	49	54	46	47	1	..	..	..	..	1	..	1	Good.
376	17	1	18	13	18	10	15	..	..	..	..	..	1	..	1	Good.
377	48	10	58	43	57	50	51	5	..	..	..	1	3	1	4	Good.
378	82	3	85	36	70	47	52	16	..	..	..	3	3	1	4	Good.
379	26	..	26	25	26	3	4	..	..	..	..	1	1	..	1	Good.
380	21	2	23	17	18	..	4	1	..	..	..	..	..	..	..	Good.

Vacant.

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 399

WASHINGTON—Continued.

Number of square.	Houses.			Houses sewered.	Water closets.	Yards sewered.	Yards paved.	Privy boxes.	Slaughter-houses.	Cow stables or yards.	Hog-pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.
	Brick.	Frame.	Total.										White.	Colored.	Total.	
381	23	...	23	13	17	7	7	...	...	...	...	1	1	...	1	Good.
382	19	...	19	4	18	3	12	...	...	...	...	...	...	...	2	Good.
383	8	9	17	4	4	4	17	13	...	...	...	1	2	...	2	Defective drainage.
384	16	...	16	16	16	16	16	...	...	...	...	...	1	...	1	Good.
385	18	8	26	19	19	19	24	7	...	...	...	...	2	...	2	Fair.
386	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
387	21	33	54	17	17	20	25	37	...	...	...	2	3	1	4	Fair.
388	14	41	55	2	2	2	14	55	...	...	...	2	12	12	12	Fair.
389	11	38	49	...	...	...	11	49	...	...	...	...	1	3	4	Fair.
390	3	15	18	4	4	4	9	14	...	...	...	...	1	2	3	Fair.
391	1	...	1	...	...	...	...	1	...	...	...	...	...	...	...	Fair.
393	7	15	22	4	14	15	12	7	...	1	...	...	2	2	4	Good.
394	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
395	25	7	32	10	27	28	30	5	...	1	...	1	2	3	5	Good.
396	1	...	1	...	...	...	...	1	...	...	...	1	1	...	1	Good.
396	16	4	20	14	16	13	14	5	...	...	...	1	2	1	3	Good.
397	22	23	45	5	34	37	43	11	...	...	...	...	3	1	4	Good.
398	21	10	31	10	30	30	30	1	...	...	...	1	4	...	4	Good.
399	30	22	52	8	48	44	46	4	...	...	...	1	4	1	5	Good.
400	42	23	65	24	50	57	50	15	...	...	...	...	1	1	2	Good.
401	17	27	44	21	33	42	38	10	...	...	...	...	1	1	2	Good.
402	24	3	27	23	26	25	26	1	...	...	...	...	5	...	5	Good.
403	27	13	40	20	28	32	35	11	...	...	...	...	1	...	1	Good.
404	13	9	22	18	19	21	20	8	...	...	...	...	1	...	1	Good.
405	29	12	41	21	32	35	33	9	...	...	...	2	2	...	2	Good.
406	15	1	16	14	15	12	7	1	...	...	...	2	4	...	4	Good.
407	19	1	20	8	23	13	7	...	...	...	...	1	1	1	2	Good.
408	17	...	17	15	17	2	2	...	...	...	...	1	1	1	2	Good.
409	2	3	5	2	2	4	4	3	...	...	...	...	1	...	1	Fair.
410	12	...	12	12	12	12	12	...	...	...	...	2	2	...	2	Good.
411	18	38	56	15	15	17	34	41	...	1	...	...	3	9	12	Defective drainage.
412	6	11	17	1	1	3	8	10	...	...	...	1	2	2	4	Fair.
413	3	17	20	...	1	6	16	19	...	...	...	...	1	1	1	Good.
414	3	21	24	2	2	3	8	22	...	...	...	1	1	3	4	Defective drainage.
415	1	...	1	...	...	...	...	1	...	...	...	...	1	...	1	Fair.
415	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
416	10	21	31	1	16	10	17	15	...	1	...	...	3	1	4	Defective drainage.
417	20	26	46	6	35	31	20	11	...	...	...	...	3	1	4	Defective drainage.
419	28	26	54	8	37	41	35	17	...	...	...	1	1	...	1	Fair.
420	12	...	12	...	12	12	12	...	...	...	...	...	1	...	1	Good.
421	21	3	24	13	23	23	24	1	...	...	...	1	3	...	3	Good.
422	25	1	26	20	24	24	25	2	...	...	...	...	2	1	3	Good.
422	19	2	21	6	16	15	14	3	...	...	...	...	1	...	1	Fair.
423	19	4	23	7	23	18	18	...	...	...	...	...	...	...	...	Good.
424	27	31	58	11	52	47	45	6	...	...	...	...	4	...	4	Defective drainage.
425	15	43	58	7	44	51	45	14	...	...	...	3	6	1	7	Good.
426	17	14	41	24	41	31	31	...	...	...	...	1	3	...	3	Good.
427	23	9	32	10	28	26	25	4	...	...	...	...	3	2	6	Good.
428	23	1	24	13	23	16	20	1	...	...	...	...	...	...	...	Good.
429	38	...	38	21	35	33	33	3	...	...	...	...	4	...	4	Good.
430	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Good.
431	21	3	24	16	19	15	15	...	...	...	...	...	2	1	3	Good.
432	20	...	20	15	20	5	...	...	...	...	...	...	1	1	2	Good.
433	12	3	15	7	7	7	6	7	...	...	...	...	1	1	2	Good.
434	11	1	12	11	11	12	12	1	...	...	...	...	1	1	2	Good.
435	23	27	50	19	19	20	40	31	...	1	...	...	1	4	6	Fair.
436	4	22	26	10	10	14	20	16	...	...	...	...	1	...	1	Good.
437	16	17	33	16	16	26	32	17	...	...	...	1	3	...	3	Good.
438	2	23	25	5	5	13	20	20	...	...	...	...	2	...	2	Good.
439	1	14	15	1	1	1	14	...	...	...	...	...	3	...	1	Bad.
439	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
440	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
441	35	63	98	5	39	61	44	60	...	1	...	1	7	0	13	Bad.
442	47	40	87	1	50	56	30	38	...	...	...	1	2	8	10	Defective drainage.
444	25	6	31	26	27	26	26	4	...	...	...	1	1	...	1	Fair.
445	21	6	27	16	17	16	24	12	...	...	...	...	1	...	1	Good.
446	16	...	16	16	16	16	16	...	...	...	...	...	1	1	2	Good.
447	51	48	99	8	71	71	70	29	...	...	...	...	7	5	12	Fair.
448	57	35	92	23	57	58	58	35	...	1	...	...	1	9	6	Fair.
449	59	42	101	16	49	47	52	...	...	...	...	...	1	4	15	Defective drainage.

*Vacant.

†U. S. Patent Office.

‡Washington Market.

400 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

WASHINGTON—Continued.

	Number of square.	Houses.			Houses sewerd.	Water-closets.	Yards sewerd.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog-pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.
		Brick.	Frame.	Total.										White.	Colored.	Total.	
	450	18	30	48	10	31	25	25	15				1	5	1	6	Good.
	451	17	26	43	5	27	27	32	18					2		2	Good.
	452	34	16	50	28	40	34	39	10						1	1	Good.
	453	56	22	78	34	61	52	42	17				1	4	2	6	Good.
	454	74	12	86	34	65	41	46	19				1	5	8	13	Defective drainage.
	455	44	6	50	40	42	38	39						7		7	Good.
	456	37	3	40	37	40	38	38					1	4		4	Good.
	457	56	6	62	37	52	48	39	10				1	3	2	5	Good.
	458	29	1	30	27	27	19	2					1	3		3	Good.
	459	18		18	16	16	5	5						3		3	Good.
	460	12		12	12	12			1					1		1	Good.
	461	31		31	27	27	4	4									Defective sewerage.
	462	27	28	55	45	45	50	50	11					1		1	Very good.
	463	8	7	15	12	12	12	12	3					1		1	Very good.
South	463	11	12	23	2	2	14	15	21					1		1	Fair.
	464	5	7	12	8	8	8	10	5					1		1	Very good.
	465	40	61	101	44	44	57	83	57				1	10	3	13	Fair.
	466	25	11	36	30	30	30	33	7					3	1	4	Very good.
	467	38	16	54	54	54	54	54					1	4		4	Very good.
	468	35	27	62	25	25	44	51	37					7	7	7	Fair.
	469	28	35	63	26	26	38	37		7				4	2	6	Bad.
	470	5	12	17	2	2	8	15		1							Fair.
	471	1	40	41	1	1	14	10	40		2			3	5	8	Deficient drainage.
West	471																
	472	1	1	2				2	2								Good.
	473		6	6				6									Good.
	475	19	10	29	8	27	12	12	10					2		2	Good.
South	475	10	11	21	15	20	20	20	20	1				3		3	Good.
East	475	5	1	6	4	6		6									Good.
	476	12		12	4	10	9	11	2								Good.
	477	10	30	40	1	23	25	21	17					2	2	4	Good.
	478	17	16	33	11	20	30	20	13					3	3	3	Good.
	479	11	4	15	1	11	11	11	2					2		2	Good.
	480	7	41	48	3	31	36	31	16		1		1	2	4	6	Good.
	481	29	16	45	12	38	40	40	7					2		2	Good.
	482																
Triangle	483	1		1	1												Good.
	484	4	1	5		1									1	1	Fair.
	484	17	18	35	12	32	31	31	2				1	3	1	4	Good.
	485	20	3	23	17	19	19	20	3				1	3		3	Good.
	486	18	26	44	15	38	35	35	5					4		4	Good.
	487	21	8	29	7	21	19	22	10								Good.
	488	29	4	33	23	33	25	27						2		2	Good.
	489	35		35	35	35	35	35						2		2	Good.
	490	37	1	38	30	36	24	24	1				1	1	1	2	Good.
	491	31		31	21	31	10	19					3	5	2	7	Good.
	B	50		50	33	43	39	31	4				2	7	1	8	Good.
	D	34	27	61	46	46	54	56	15					4		4	Very good.
	492	44	26	70	45	45	53	57	25		2			2	2	4	Good.
	493	20	18	38	21	21	21	21	7					1	3	4	Good.
	494	32	55	87	40	63	57	48		1			4	6	6	12	Fair.
	495	20	5	25	8	11	21	17						2		2	Drainage defective.
	496	38	36	74	50	50	70	70	24				3	8		8	Good.
	497	27	30	57	41	41	56	56	16				1	1	1	2	Good.
	498	38	15	53	13	13	17	39	40				1	4	3	7	Fair.
	499	25	26	51	4	4	20	28	47				1	3	2	5	Fair.
	500	18	50	68	8	8	14	39	60		2			4	3	7	Bad.
	501	19	52	71	5	5	16	36	66		2		2	4	5	9	Drainage defective.
	502	38	36	74	26	26	34	61	48		2			6		6	Not very good.
	503	23	16	39	3	3	13	21	36				1	3		3	Fair.
	504	5	3	8	6	6	6	6	2								Good.
Triangle	507	5	6	11	3	8	9	5	3					2		2	Good.
	507	19		19	19	19	19	19						1		1	Good.
	508	13	10	23		5	4	17	18					4		4	Good.
	509	13		13	1	7	3	8	6					1		1	Good.
E.	509	46	10	56	1	49	43	43	7				1	7	5	12	Fair.
	510	55	29	84	2	39	39	41	44				1	4	6	10	Drainage defective.
	511	41	25	66	16	40	38	48	24		3		1	4	1	5	Good.
	512	40	74	114	3	46	60	62	72				2	4	8	12	Fair.
	513	46	97	143	22	48	56	63	95		1		6	5	15	20	Bad.
	514	39	30	69	32	57	62	60	12					3	2	5	Fair.
N.	515	21	48	69	16	36	60	46	33				2	4	1	5	Drainage defective

* Vacant.

Lumber yard

WASHINGTON—Continued.

Number of square.	Houses.			Houses sewered.	Water-closets.	Yards sewered.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.
	Brick.	Frame.	Total.										White.	Colored.	Total.	
S. 515	46	20	66	5	28	33	35	36				1	2	2	810	Drainage defective.
516	56	53	109	24	83	83	83	85				2	8	6	14	Fair.
517	9	50	59	8	40	49	50	10				2	6	6	6	Good.
518	28	38	66	15	55	51	52	11				1	5	2	7	Good.
519	76	55	131	42	65	66	76	71				2	8	6	14	Bad.
520	1	1	2					1						1	1	Fair.
521	2		2				1	2								Fair.
522	12	4	16			1	1	14						1	1	Fair.
523	11	2	13				10	13						1	1	Drainage defective.
524	31	19	50	11	27	35	39	24					1	1	2	Good.
525		7	7		1	7	5	6						1	1	Good.
526	16	26	42	1	23	22	20	18						1	1	Good.
527	3	26	29	1	16	26	21	14						5	5	Good.
528	33	10	43	4	20	26	37	14					2	1	3	Good.
529	24	4	28	11	27	25	25	1					1	3	4	Good.
530	22	29	51	7	36	37	37	15				1	1	2	3	Good.
531	14	12	26	17	21	21	20	7					1	1	1	Good.
532	15	2	17	14	15	14	14	2					1	1	1	Good.
533	33	1	34	32	33	33	33	1					2		2	Good.
534	46	2	48	48	46	46	46	2					1	3	3	Good.
Res. 10	66		66	50	51	50	50	18		3		3	6	4	10	Fair.
A. 46		4	50	40	44	43	42	5				2	9	1	10	Fair.
C. 19	24	43	1	1	6	12	42						2	3	5	Defective drainage.
535	58	73	131	31	31	52	61	104				3	7	10	17	Bad.
536	35	43	78	16	16	34	40	62				1	4	7	11	Bad.
537	28	20	48	1	1	1	24	47					5	5	5	Bad.
538	37	27	64	24	24	30	51	40		3			8	8	8	Bad.
539	17	76	93	22	22	43	35	71				2	1	8	9	Fair.
540	10	76	86	9	9	40	32	77				4	2	14	16	Fair.
541	10	69	79	8	8	19	22	71		1		2	2	16	18	Bad.
542																
543	4	69	73	5	5	21	16	67		2		1	2	6	8	Bad.
544	6	15	21	1	1	5	5	20						2	2	Defective drainage.
545	31	83	114	6	6	9	23	108					2	4	6	Bad.
546	4	4	8					8					2		2	Fair.
E. 546	1	1	2					1						1	1	Fair.
547		3	3					3								Fair.
E. 547	1	1	2					1								Fair.
550		2	2					2						1	3	Fair.
551	10	44	54	1	5	53				1		2	5	5	5	Defective drainage.
552		4	4					4		1		1	1	1	2	Fair.
553	5	29	34	1	6	7	33							1	1	Bad.
W. 553	3	13	16			9	15									Bad.
554		9	9				9	1				1	3	2	5	Fair.
555	4	1	5	1	1	2	4							1	1	Fair.
557	41	64	105	4	27	24	42	78		4		1	6	10	16	Defective drainage.
558	15	30	45	1	18	21	14	27						11	11	Not very good.
559	25	28	53	4	11	16	22	42		3			4	2	6	Fair.
560	10		10	7	10	10	10					1	2		2	Good.
561	27	1	28	6	18	18	20	10					1		1	Good.
S. 562	16	9	25	16	20	20	20	5								Good.
562	11	18	29	4	17	22	25	11				1	3	2	5	Good.
563	20	7	27	1	22	22	23	5								Fair.
564	18	43	61	8	26	23	32	38				1	5	5	10	Good.
565	18	10	28	12	27	27	29	1					4		4	Good.
566	15	25	40	6	26	27	27	15					1	3	4	Good.
567	22	15	37	8	25	28	27	12		1		1	3		3	Good.
568	35	1	36	30	35	35	35	1								Good.
569	34	27	61	21	25	28	24	35				2	4	6	10	Fair.
570	42		42	42	42	42						1	2	1	3	Good.
571	48	2	50	32	35	33	38	15				1	4	2	6	Defective drainage.
572	14		14	14	14	14										Good.
S. 572	3	1	4	3	3	1	1									Fair.
573	17	8	25	19	19	17	10	1				2	2		2	Good.
Res. 11	42	8	50	21	24	24	24	26				2	2	3	5	Good.
574	18	9	27	18	26	26	26	1					3		3	Good.
Res. 12	28	1	29	28	29	28	28	3					1	1	2	Good.
575	27	36	63	24	42	48	47	21				1	2	1	3	Fair.
576	4	16	20	3	3	6	8	17					2	1	3	Fair.
577	10	25	35	1	1	1	5	34				2		4	4	Bad.
578	1	1	2					1						1	1	Fair.

* Vacant.

WASHINGTON—Continued.

Number of square.	Houses.			Houses sewerd.	Water-closets.	Yards sewerd.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition square at the time of examination.
	Brick.	Frame.	Total.										White.	Colored.	Total.	
579	14	15	29				14	29		1		1	5	5		Fair.
580	6	40	46				12	46					6	6		Bad.
581	30	33	63				21	63		3			3	2	5	Bad.
582	12	51	63				9	63		3		6	4	5	9	Fair.
583	17	45	62				8	62				1	13	14	16	Drainage defective.
584	8	37	45				12	45		3		3	9	11		Drainage defective.
585	21	36	57				15	57				3	13	15		Bad.
586	9	36	45				8	48		5		1	2	4	6	Bad.
587	8	33	41				8	41		12			5	5		Fair.
588	4	9	13				11	13					3	3		Fair.
589	3	10	13				3	13		1		1	4	4		Good.
590		16	16				2	16					3	3		Fair.
591		2	2													Drainage defective.
592		1	1					1								Drainage defective.
593		10	10				10	10					1	1		Bad.
594	3	47	50				3	50					1	1	2	Bad.
595		1	1				1	1								Bad.
596	7	31	38				6	38				2	3	4	7	Bad.
597	1	1	2					2					3	3		Fair.
*W. 597		5	5				5									Not very good.
598		15	15				15						1	1		Not very good.
599	1	2	3				1	3	1	1	1					Not very good.
600		4	4				4		1	1			1	1	2	Not very good.
601	1	1	2					2								Not very good.
602		1	1													
603		1	1													
604																
605																
606																
607		1	1					1								Fair.
608																
609																
610																
611		2	2					2			2					
612		2	2					2								
613		1	1					1								
614		1	1					1								
615	10	11	21				21						1		1	Good.
616	18	36	54				5	54		1		1	3	2		Bad.
617		6	6				6						1	3		Bad.
618																
619	1		1				1	1								
620	21	33	54	10	10		24	44		1		1	7	7		Drainage defective.
621	4	3	7	1	4		4	3					3	1		
622	11	3	14	7	13		12	1								
623	140		140	140	140	140	140					2	13		13	Good.
W. 623	33		33	33	33	33	33					2	2		2	Good.
624	61	40	101	10	47	42	14	54				1	4	1	5	Drainage defective.
625	29	26	55	7	19	24	37	36				1	7	4	11	Drainage defective.
626	18	31	49		20	23	40	28		4		1	12	2	14	
628	49	4	53	35	53	48	48					1	3	2	5	Good.
629	4		4	5	3	3	3	1					2	1	3	
630	10	11	21	6	19	15	16	2					1	1	2	
631	21	20	41	13	40	39	37	1					1	1	2	Good.
632	1		1													B. & O. R. R. depot.
633	6	12	18	6	6	5	4	12				3	1	2	3	Bad.
634	20	8	28	11	29	19	7					1	4	2	6	
635	4	12	16	1	1	1	1	15		1			2	3	1	Bad.
636	4	3	7				7					2		3	3	Bad.
637		7	7				7									Drainage defective.
638	8	14	22			5	22					3	2	7	9	Drainage defective.
639		1	1				1							1	1	
640	2	17	19			10	3	24								Fair.
E. 641	13	4	17	5	5	9	13	12		1			1		1	Fair.
642	5	27	32				2	32				2	1	2	3	Bad.
E. 642	4	3	7				7					1	2		2	Defective drainage.
643	5	10	15				15							3	3	Fair.
E. 643	3	4	7				7									Bad.
S. 643		8	8					8								Fair.
645																
646																
647	1		1	1	1	1	1									
648	1		1				1	1								
*649																

*Vacant.

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 403

WASHINGTON—Continued.

Number of square.	Houses.			Houses sewerd.	Water-closets.	Yards sewerd.	Yards paved.	Privy boxes.	Slaughter-houses.	Cow stables or yards.	Hog-pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.
	Brick.	Frame.	Total.										White.	Colored.	Total.	
650	1	37	38					38				3		3	3	Fair.
651	6	19	25			2	12	25		1				1	1	Fair.
652	8	2	10					10					3		3	Fair.
653		6	6					6						1	1	Fair.
654	1	12	13					13				1	1	2	3	Fair.
655		4	4					4	1		1					
656		1	1					1		1						
657	4	3	7					4	2		1			1	1	Good.
658	1	3	4					4						1	1	
659	4	7	11					11	1				1		1	Fair.
660	1	1	2					2								
661	3	3	6					6			1					
662	3	2	5					5								
663	6	4	10				2	9	1			1	1		1	Good.
664	11	13	24				3	24				1	4		4	Drainage defective.
665																
666																
667																
668																
669																
670																
671																
672																
673																
674																
675	150	150	300	150	150	149	149	300				1	13		13	Good.
676	31	25	56	16	23	19	38	132		2		1	10		10	
677	36	99	135	2	6	5	29	132		3		4	17	3	20	Deficient sewerage.
678	3	3	6					6		3				1	1	
679	3	8	11		2	4	5	9					2	2	4	
680	1	2	3	1				2								
681	1	1	2					2								Fair.
682	3	4	7	2	2	2	2	4								Good.
683	1	2	3	1	3	1	1									
684	14	10	24	8	15	15	15	9					2	2	4	Good.
685	15	7	22	16	18	15	15	4					1	1	2	Good.
686	21	7	28	16	22	16	16	5				1	3	1	4	Good.
687	9	1	10	9	9	9	9	1								Good.
688	28	7	35	27	27	28	29	13				1	2	2	4	Good.
689	12	10	22	13	13	17	15	9		2						Good.
690	14	4	18	13	17	17	17	5					3		3	Good.
691	22	12	34	15	15	15	21	19				1	4	2	6	Bad.
692	17	12	29	17	17	17	17	12				1	1	3	4	Fair.
693																
694																
695	4	21	25					25						2	2	Fair.
696	1	11	12				3	12								Fair.
697	3	7	10				8	10				1		1	1	Good.
698	1		1					1								
699		1	1					1					1		1	
700	2	1	3				2	3				2	3		3	
701	9	5	14				6	14								Good.
702	13		13				2	13								Good.
703	13	10	23				2	23				1	1	1	2	Good.
704																
705	1	1	2					2								
706	1	1	2					2								
707	2	2	4					4								
708																
709																
710																
711		2	2					2								Not very good.
712		3	3					3								
713		15	15				2	13		2						Not very good.
714		8	8				4	8								
715	3	17	20				11	20						1	1	Fair.
716	13	20	33				26	37				2	5		5	Fair.
717	11	17	28				24	28					1		1	Fair.
718	1		1													Not very good.

* Vacant.

† Brick-yard.

404 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

WASHINGTON—Continued.

Number of square.	Houses.			Houses sewered.	Water-closets.	Yards sewered.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.
	Brick.	Frame.	Total.										White.	Colored.	Total.	
719	11	50	61	...	...	...	40	61	...	6	...	...	6	...	6	Drainage defective.
720	32	4	36	...	32	...	32	4	...	...	...	1	3	...	3	Fair.
721	18	...	18	18	18	...	18	...	...	...	...	...	1	...	1	Fair.
722	18	...	18	18	18	6	12	...	...	...	...	...	2	...	3	Good.
723	1	...	1	1	1	1	1	...	...	...	...	1	1	...	1	Drainage defective.
724	17	40	57	18	24	28	32	33	...	4	...	1	3	1	4	Fair.
725	36	31	67	37	39	44	44	46	...	1	...	1	3	3	6	Fair.
726	5	2	7	5	7	7	5	...	...	1	...	1	1	...	1	Good.
727	21	...	21	21	21	21	21	...	...	...	...	1	1	...	1	Good.
728	31	6	37	24	25	30	35	15	...	...	...	...	5	...	5	Good.
729	28	10	38	23	26	28	30	14	...	...	...	1	...	2	...	Good.
730	12	2	14	6	7	10	11	7	...	...	...	1	...	1	1	Fair.
731	13	3	16	5	11	11	8	4	...	...	...	...	...	...	...	Fair.
732	70	22	92	60	66	54	76	27	...	...	...	2	1	4	5	Good.
733	22	20	42	22	26	35	27	17	...	...	...	2	1	4	5	Not very good.
734	12	32	44	11	12	13	21	32	...	1	...	...	1	3	4	Fair.
735	1	...	1	...	...	...	1	1	...	...	...	...	...	1	1	...
736	1	...	1	...	...	...	...	...	...	...	...	2	1	...	...	Good.
737	1	34	34	...	...	...	1	34	...	...	...	...	...	5	6	Bad.
738	1	...	1	...	...	...	1	1	...	...	...	...	...	2	2	...
739	5	9	14	...	...	...	5	14	...	...	...	...	...	...	...	Fair.
740	12	8	20	...	...	...	15	20	...	...	...	1	4	1	5	Bad.
741	6	4	10	...	...	...	2	10	...	...	...	1	1	...	1	Bad.
742	15	16	31	...	...	...	18	31	...	...	...	2	2	2	4	Fair.
743	3	2	5	...	...	...	1	6	...	...	...	...	1	1	1	...
743	10	27	37	...	...	...	5	37	...	...	...	1	2	6	8	Fair.
744	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
747	2	4	6	...	...	...	3	6	...	...	...	...	...	...	...	Good.
748	13	15	28	...	...	...	15	28	...	1	...	...	...	...	...	Drainage defective.
749	13	11	24	...	...	...	10	24	...	1	...	...	1	...	1	Bad.
750	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
751	10	5	15	1	1	2	5	15	...	...	...	1	4	...	4	Fair.
752	5	16	21	...	...	...	13	21	...	...	...	...	3	...	3	Good.
753	...	1	1	...	...	...	1	1	...	...	...	...	1	...	1	...
754	...	1	1	...	...	...	1	1	...	...	...	...	...	...	...	Drainage defective.
755	9	20	29	1	1	7	13	26	...	...	...	...	1	2	3	Good.
756	6	11	17	1	7	8	11	8	...	...	...	...	1	2	4	Good.
757	16	26	42	3	21	26	32	21	...	...	...	3	3	1	4	Good.
758	5	12	17	4	9	9	9	9	...	...	...	...	3	1	4	Fair.
759	11	17	28	19	25	27	25	4	...	1	...	...	1	...	1	Good.
760	30	...	30	30	30	30	30	...	...	...	...	...	4	...	1	Good.
761	31	5	36	24	32	30	32	4	...	...	...	1	4	...	4	Defective sewerage.
762	20	16	36	15	28	18	17	10	...	...	...	2	5	1	6	Fair.
763	23	9	32	16	17	15	19	10	...	1	...	...	1	1	2	Fair.
764	1	3	4	3	3	4	4	3	...	...	...	...	1	...	...	Good.
765	1	...	1	...	...	...	1	1	...	...	...	...	...	...	...	Good.
766	7	19	26	...	...	...	18	26	...	...	...	2	3	5	8	Fair.
767	1	9	10	...	...	...	4	10	...	...	...	...	2	1	3	Fair.
768	2	10	12	...	...	...	10	12	...	...	...	...	...	1	1	Fair.
769	4	11	15	...	...	3	8	15	...	...	...	1	1	...	1	...
770	6	14	20	...	2	2	5	18	...	...	...	...	1	1	2	Fair.
771	4	3	7	1	1	1	3	6	...	...	...	1	1	3	4	Fair.
772	...	4	4	...	...	...	4	...	...	...	...	1	1	...	1	Good.
773	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...
774	1	28	29	...	...	...	18	29	...	...	...	...	...	1	1	Drainage defective.
775	6	6	12	...	...	...	7	12	...	...	...	...	...	...	...	Fair.
776	4	33	37	...	...	...	16	37	...	7	...	...	1	...	1	Bad.
777	1	12	13	1	1	1	10	12	1	1	...	...	...	...	...	Bad.
778	...	3	3	...	...	...	...	...	...	...	...	...	...	...	...	Fair.
779	...	8	8	...	...	...	...	8	...	...	...	...	...	...	...	Bad.
780	4	11	15	4	4	...	5	11	...	...	...	...	...	3	3	Fair.
781	2	...	2	...	...	...	2	2	...	...	...	...	...	...	...	Good.
782	11	21	32	1	7	7	15	26	...	...	...	...	2	3	4	Bad.
783	4	14	18	4	4	5	2	14	...	...	...	...	...	...	3	Fair.
784	16	6	22	5	9	10	11	13	...	...	...	...	2	1	3	Drainage defective.
785	31	15	46	11	18	27	31	31	...	2	...	1	3	2	5	Good.
786	14	17	31	12	18	24	22	14	...	...	...	3	3	...	3	Good.
787	24	8	32	21	25	27	27	12	...	...	...	...	1	...	1	Good.
788	21	10	31	15	24	24	25	7	...	...	...	...	1	2	3	Good.
789	4	4	8	4	6	8	4	1	...	...	...	...	...	1	1	Good.
790	16	13	29	7	22	16	18	9	...	...	...	...	2	...	2	Bad.
791	13	18	31	12	13	16	13	17	...	1	...	1	3	...	3	Bad.

*Vacant.

†Brick-yard.

WASHINGTON—Continued.

Number of square.	Houses.			Houses sewered.	Water-closets.	Yards sewered.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog-pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.
	Brick.	Frame.	Total.										White.	Colored.	Total.	
792	3	24	27		7	8	12	20					2		2	Fair.
793	8	22	30	1	12	21	21	18						2	2	Good.
794																
795	5	39	44	1	4	10	22	44					2	6	8	Good.
796	5	7	12	8	3	3	6	10					1	2	3	Fair.
797	8	25	33	1	1	1	6	32				3		6	8	Bad.
798	1	31	32	1	1	1	12	31					1	3	3	Drainage defective.
799	13	20	33				10	33				1	2	3	5	Fair.
800	1	11	12				5	12					2		2	Fair.
801	6	8	14	1	1		7	13					1		1	
802	7		7				5	7					2	1	3	Good.
803																
804																
805	9	1	10				2	11					3		3	Good.
806	3	9	12				5	12				1	1		1	Drainage defective.
807	1	2	3				1	8		2			2		2	Drainage defective.
808	2	2	4				3	4								Fair.
809	14	3	17				17	17		1		1	1	1	2	Bad.
810																
811	1	1	2	1	1		1	1				1	1		1	Good.
812	3	2	5				2	5					1	1	1	Bad.
813	1	10	11				4	11					1		1	Fair.
814	5	8	13	2	4	3	5	4						1	1	Fair.
815	1	1	2				1	1						2	2	Good.
816	12	25	37	6	9	10	32	28		2			3		3	Drainage defective.
817	4	10	14	11	15	13	16	8					2		2	Fair.
818	12	17	29	15	22	20	25	12					2	4	6	Fair.
819	16	10	26	14	19	22	21	8					1	1	2	Good.
820	1	24	25	1	4	8	11	21								Fair.
821	5	26	31		3	6	14	28					1	4	5	Good.
822	6	27	33	2	5	5	17	32		1			2		2	Good.
823	2	26	28	1	1	2	17	27				2		2	2	Good.
824	3	13	15				7	15								Fair.
825	8	11	19				7	19						1	1	Drainage defective.
826	9	11	20				12	19						1	1	Fair.
827		2	2				2	2				1		1	1	
828		6	6				1	6						1	1	Good.
829	4	23	27				6	27				1	1		1	Fair.
830	1	1	2					2		1						Fair.
831																
832		2	2					2								Drainage defective.
833	4	6	10				6	10		2			2		2	Fair.
834																
835	1	2	3				3	3								Good.
836	2	6	8				2	8								Good.
837	3	7	10				4	10		3				1	1	Drainage defective.
838	3	4	7				4	7								Good.
839	1	1	2				1	1					2		2	
840	9	10	19	6	7	5	15	13					1	1	2	Drainage defective.
841	7	12	19	10	15	11	13	6								Fair.
842	17	17	34	11	16	24	25	18					2	3	5	Good.
843	13	10	23	12	18	18	17	7		1			1	1	2	Good.
844	6	11	17	3	7	10	12	12								Fair.
845	6	13	19	3	6	12	11	13					2	2	4	Good.
846	2	21	23	3	18	13	27	23				1	1	3	4	Fair.
847	13	21	34	4	15	17	26	19		1			1	3	4	Good.
848	3	7	10				1	10				1	1	2	3	Bad.
849		2	2					2								
850	1	17	18				3	18					2		2	Bad.
851																
852																
853	1		1					1								
854	3	8	11				7	11								Good.
855	5		5				3	5					1		1	Not very good.
856	7	23	30	5	5	4	13	27		3		1	3	3	6	Drainage defective.
857		11	11			4	3	11		2		1	2		2	Good.
858																
859																
860																
861																
862																
863	2	7	9				2	9						1	1	Good.
864	4	2	6	1	1	1	4	5								Fair.
865	5	24	29	1	3	10	9	25		1		1		1	1	Bad.

* Coal-yard.

† Vacant.

WASHINGTON—Continued.

Number of square.	Houses.			Houses sewerd.	Water-closets.	Yards sewerd.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog-pens.	Deaths from principal symptomatic diseases.	Deaths.			Sanitary condition of square at the time of examination.
	Brick.	Frame.	Total.										White.	Colored.	Total.	
866	2	3	5				5	5				1	4	4		Drainage defective.
867	26	29	55	27	45	34	40	11		1			4	3	7	Good.
868	9	18	27	11	15	15	24	14		1			1	1	1	Fair.
869	33	16	49	29	37	36	38	6					1	1	1	Good.
870	51	30	81	17	44	41	68	38		1		1	6	6	12	Drainage defective.
871	9	7	16	11	14	15	16	1		1			1		1	Good.
1872																
873	15	15	30	6	17	18	21	7								Good.
874	21	26	47	19	44	43	44	4				1	3		3	Good.
875	1		1	1	1	1	1	2								Good.
876	22	27	49	6	13	13	33	36					1		1	Fair.
877	28	38	66	15	31	35	58	40					1	2	3	Fair.
878	21	27	48	8	8	17	35	43		1			5		5	Good.
879	6	2	8				1	8						2	2	
880	3	10	13		1		1	12								
881	19	4	23		2		2	23		1			1		1	
882	13	4	17				3	17					2		2	Drainage defective.
886		1	1					1								
887	5		5				2	5								Bad.
888		10	10				5	10	1				1		1	
889	9	13	22	17	22	22	23					1	2	1	3	Good.
890	6	4	10	2	7	7	10	3		1			1		1	Fair.
891		4	4			2	4	4								
892		16	16	16	16	16	16	3					1		1	Good.
893	4	15	19		1	1	12	17					1	2	3	Drainage defective.
894	13	8	21	2	2	2	10	19		2			2		2	
895	5	7	12		1	2	8	11		1				2	2	Drainage defective.
896	1	3	4		1		1	3								
897	5	6	11	7	10	12	7	5		1						Good.
898	17	10	27	14	14	6	15	13				2	2	4	6	Fair.
899	1		1				1	1								
900	13	24	37	7	24	34	35	14				1	1		1	Good.
901	1		1		2		1									
902	1	12	13	5	8	9	10	5								
903	4	44	48	4	9	14	35	40					3		3	Drainage defective.
904	31	24	55	12	25	38	46	28					3		3	Fair.
905	18	4	22	2	4	5	17	21				1	1	1	2	Fair.
906	19	6	25				18	25					1	1	2	
907	10	4	14		5	2	5	9				1	1	3	4	Fair.
*908																
*909																
*910																
*911																
912	12	12	24	24	24	18	24	9					3		3	Good.
*913																
914	1	5	6				2	6		1				1	1	Good.
915		1	1				1	1								Fair.
S. 915	7	7	14		6	4	5	8		2		1	1		1	Fair.
916	11	16	27			4	20	27		3			1	1	2	Drainage defective.
917		1	1					1						1	1	
S. 917		1	1		1	1	1	1	1							
918		1	1		1	1	1	1								
919	8	7	15	4	8	8	10	5				1	2		2	Good.
920	12	14	26	13	14	14	18	10					1	4	5	Fair.
921	1	2	3			1	3							1	1	
922	1		1				1	1								
923	7	10	17	5	5	5	13	16								Fair.
924	1	7	8	1	1	1	4	9								Fair.
925	11	12	23	5	12	12	15	11					2		2	Drainage defective.
926	8	31	39	2	5	9	30	34				1	4		5	Drainage defective.
*927																
928	14	5	19	1	8	7	12	10				1	1		1	Fair.
929	2	9	11				5	11				1	1		1	Drainage defective.
930	19	7	26	3	6	5	11	14					2	4	4	Fair.
931	1	1	2			1	1	1								
932		9	9	9	9		9	4		1		2	2	1	3	Good.
933	15	29	44	17	28	35	22	15				1	1	1	2	Fair.
934	3	19	22	8	22	2	8	1				1	1		1	Drainage defective.
935		22	22	1	22	6	22	7					1		1	Good.
*936																
937	1		1				1	1								
938		7	7					7						6	6	

* Vacant.

† Eastern market-house.

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 407

WASHINGTON—Continued.

Number of square.	Houses.			Houses sewered.	Water-closets.	Yards sewered.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog-pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.
	Brick.	Frame.	Total.										White.	Colored.	Total.	
939	14	14					5	14		2		1	1	2	8	Fair.
940	1	1		1	1	1	1	1								
941	2	13	15	5	8	8	10	7					1		1	Fair.
942	3	9	12	2	4	3	4	8								Fair.
943		10	10	2	2	3	7							1		Drainage defective.
944	1	39	40	4	23	25	22	18					2		2	Fair.
945	9	28	37	2	9	9	18	28		1			1	2	3	Fair.
946		1	1					1								
947	14		14	14	14		14					1	2		2	Good.
948	1		1	1	1	1	1									Good.
949	7	27	34				22	34					3		3	Drainage defective.
950	6	42	48				26	48					2		2	Bad.
951	1	17	18				13	18					3		3	Fair.
S. 951	1	1	2				1	2								
952	8	4	12				7	12					1		1	Fair.
953	4	7	11					11					1		1	Good.
954																
955	1		1			1	1	1								Good.
956		9	9					9						1	1	Bad.
957		4	4				4	4							1	Fair.
958													1			Fair.
959	26	20		6	5		11	21				1		3	3	Bad.
960	15	16	31	14	14	14	14	17					1	1	2	Fair.
961		3	3				2	3		3						Good.
962		1	1				1	1					1		1	
963		3	3				2	3								Good.
964	3	3	6		1	3	6	6								Good.
965		3	3			1		3								Fair.
966		2	2				2	2								Fair.
967	4	5	9	4	7	5	6	2								Good.
968	6	6	12	3	7	7	6	5		2				1	1	
969		1	1				1									
970	8	5	13	4	4	7	8	9				1	2	2	4	Fair.
971		25	25	1	3	8	22	22								Fair.
972	8	5	13	3	9	5	10	5					2		2	Fair.
973	4	12	16	1	1	3	8	15					4		4	Drainage defective.
974	7	23	30				13	30		1			2		2	Drainage defective.
975	4	23	27				20	27					3		3	Fair.
S. 975	8	6	14				7	14		1			2		2	Drainage defective.
976	1	22	23				15	23					1		1	Fair.
977	11	19	30				12	30					3	1	4	Fair.
978	1	6	7					7								
979	1	2	3					1								
N. 980																
980																
981		2	2					2								
982																Drainage defective.
983	2	17	19					19		2		1	1		1	Fair.
984	1		1					1					2		2	
985	2	14	16					16					1		1	
986	2	14	16					16		1		2	2	2	4	Drainage defective.
987	16	36	52	21	32	20	52	21					3		3	
988																
989	16		16	12	12	16	16	12								Good.
990	9	10	19	6	9	3	8	10		1			1		1	Fair.
S. 990		4	4				1	4		1						Drainage defective.
991	6	3	9	2	2	3	6	7								Fair.
992	1	8	9		1	3	2	4		1						Fair.
994	6	5	11	1	1	1	10	11		1						Fair.
995	3	24	27	1	2		15	26		1			2		2	
996	1	14	15				8	15		1			2		2	Fair.
998		8	8					8								Fair.
999	1	8	9		2	2	2	7								Good.
1000	2	28	30				10	30		1			5		5	Fair.
1001	4	10	14				3	14					2		2	Fair.
S. 1001		1	1				1	1								
1002	12	16	28	1	1	7	8	28				1	1		1	Bad.
1003		1	1					1								
1004	2		2					2								
1005	1	7	8					8					1		1	Good.
1006		8	8				1	8		1						Bad.
1007	1	12	13				2	13		2		1	2		2	Fair.

* United States Marine Barracks.

† Vacant.

408 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

WASHINGTON—Continued.

Number of square.	Houses.			Houses sewered.	Water-closets.	Yards sewered.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog-pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.
	Brick.	Frame.	Total.										White.	Colored.	Total.	
1008	1	1					1	1								
* 1009																
1010	15	15						15						6	6	Bad.
1011	1	1						1								Fair.
* 1012																
* 1013																
1014	1	1						1								Fair.
* 1015																
* 1016																
* 1017																
1018	8	26	34				9	34		1			1	1	2	Fair.
1019	1	27	28				11	28		2		2	4		4	Fair.
S. 1019		7	7				3	7					1		1	Fair.
1020	4	39	43				27	43		1		1	2		2	Fair.
1021		5	5													Fair.
1022	1	3	4				1	4			1					Fair.
1023	1	2	3				3	2			1					Fair.
* 1024																
* 1025																
1026	15	11	26	1	9	21	18	18					3	1	4	Bad.
1027		10	10				6	10				1	1		1	Drainage defective.
1028		6	6					6						1	1	Drainage defective.
* 1029																
1030		1	1					1								Fair.
† 1031																
* 1032																
1033	4	18	22				5	22		2				2	2	Drainage defective.
1034		18	18					18						4	4	Bad.
1035		1	1					1								Good.
* 1036																
1037		9	9					9				1		1	1	Bad.
* S. 1037																
* 1038																
1039	2	17	19				2	19						4	4	Bad.
* 1040																
* 1041																
W. 1041		4	4					4								Drainage defective.
1042		7	7				1	8								Fair.
1043	6	18	24				3	24					1		1	Fair.
1044		1	1					1								Fair.
1045		5	5					5					4	1	5	Fair.
1046	3	4	7				2	7						1	1	Fair.
1047	4	27	31				3	31				4	6		6	Fair.
1048		2	2					2								Fair.
1049	3	5	8				2	8								Fair.
1050	3	6	9				2	9								Bad.
1051		1	1					1		1						Drainage defective.
1052	3		3				3					1		1	1	Fair.
* 1053																
* 1054																
1055		11	11				4	11				1	1	4	5	Fair.
* 1056																
1057		2	2					2								Fair.
1058		17	17				4	17		1		2		3	3	Fair.
1059		1	1					1				1		1	1	Fair.
S. 1059	3	7	10				3	10				1		1	1	Drainage defective.
1060		7	7					7		2				1	1	Fair.
1061	1	14	15					15						2	2	Bad.
* 1062																
* 1062																
1063	1	2	3					3								Fair.
* 1064																
* NE. 1065																
1065		1	1					1								Fair.
1066		4	4					4					1		1	Fair.
* 1067																
* 1068																
1069		4	4					4								Fair.
1070	1		1					1						1	1	Fair.
1071		4	4					4								Bad.
1072		1	1					1								Bad.
S. 1072		2	2					2								Bad.

* Vacant.

† Brick-yard.

WASHINGTON—Continued.

Number of square.	Houses.			Houses sewered.	Water-closets.	Yards sewered.	Yards paved.	Privy-boxes.	Slaughter-houses.	Cow stables or yards.	Hog-pens.	Deaths from principal zymotic diseases.	Deaths.			Sanitary condition of square at the time of examination.
	Brick.	Frame.	Total.										White.	Colored.	Total.	
1073		4	4					4								Bad.
1074		2	2					2								Bad.
1075		4	4					4								Fair.
*1076																
*1077																
1078	1	5	6					6								Fair.
*1079																
*1080																
1082		9	9					7						3	3	Bad.
1083		7	7					5								Bad.
1084		2	2					2						1	1	Bad.
1085		10	10					10		1		1		1	1	Drainage defective.
*1086																
1087		9	9					9					1		1	Drainage defective.
1088		9	9					9				1	1	1	2	Drainage defective.
1089																
1090		1	1					1				1	1		1	
1091		1	1					1								
*1091																
*1092																
1093		8	8					8								Bad.
1094		8	8					8						2	2	Bad.
1095	2	7	9				1	9		1			1		1	Bad.
1096		1	1					1					1		1	Bad.
*1097																
1098		8	8					8				2	3	3	6	Fair.
*1100																
*1102																
*1107																
1108	1	12	13					10				1		2	2	Bad.
1109		3	3					2						1	1	Bad.
1110	1	10	11					11					1	1	2	Fair.
1111		3	3					3					1		1	Fair.
*1112																
*1113																
1114																
*1114																
*1118																
*1119																
*1120																
*1121																
*1122																
*1125																
*1126																
*1127																
*1128																
1129																
1132																
1133																
1134																
1135																
1136																
*1137																
*1138																
*1139																
*1140																
*1141																

* Vacant.

† Cemetery.

RECAPITULATION.

	Washington.	Georgetown.	Total.
Brick-houses	14,392	1,157	15,549
Frame-houses	13,736	1,189	14,925
Total houses	28,128	2,346	30,474
Houses sewered	9,580	486	10,066
Water-closets	13,410	704	14,114
Yards sewered	13,236	436	13,672
Yards paved	15,554	938	16,492
Privy-boxes	14,508	1,378	15,886
Slaughter-houses	17		17
Cow stables or yards	314	55	369
Hog-pens	11		11
Deaths from principal zymotic diseases	464	31	495
Deaths, white	1,533	131	1,664
Deaths, colored	1,295	89	1,384
Total deaths	2,828	220	3,048

Average number of occupants to each house, 5.25.

INVESTIGATIONS TO ASCERTAIN LOCAL CAUSE OF DISEASE.

The force at the disposal of the health officer has never been sufficient to warrant the comprehensive research, study, and investigation which the importance of this subject demands. Notwithstanding the enlightened and advanced condition of the public mind and the general recognition of the importance of every measure in the interest of the public health, our legislators are yet slow to provide in the appropriation bills the means for employment of adequate and competent skill in ferreting out and placing before the public all possible information which might tend to prevent the rise and spread of infectious or contagious diseases. In consequence of this limited means and force we have not been able to give time to proper investigation in the effort to ascertain the local cause, if such existed, in cases of death from zymotic disease. The subject is a broad one and the field it opens affords opportunity for extended illustration, by fact and figure, which would prove of great interest and value. The following report of the medical sanitary inspector gives information as to examination in 124 cases; 85 of diphtheria, 27 of typhoid fever, and 12 of scarlet fever. The information is not so full and complete as we could desire, only three diseases being given, and the facts in no particular case illustrated. The causes before mentioned must be our excuse for this, and I trust some information may be gleaned from the following report.

Success attended our efforts in the only case where we were called upon to prevent the spread of small-pox during the year.

REPORT OF MEDICAL SANITARY INSPECTOR.

SIR: I have the honor of making and presenting to you the following report of my work as medical sanitary inspector for the year ending June 30, 1881:

Investigations made.	Diseases.			
	Scarlet fever.	Diphtheria.	Typhoid fever.	Total.
First quarter	2	6		8
Second quarter	5	46	10	61
Third quarter	4	21	11	36
Fourth quarter	1	12	6	19
Total for year	12	85	27	124

Investigations made.	Diseases.			Total.
	Scarlet fever.	Diphtheria.	Typhoid fever.	
Condition of premises:				
Sanitary.....	11	67	25	103
Unsanitary.....	1	18	2	21
Disposition of fecal matter:				
Water-closets.....	8	43	14	65
Privy-boxes.....	4	42	13	59
Water used:				
Hydrant or Potomac.....	9	67	18	94
Well and spring.....	3	18	9	30
Probable source of infection:				
Sporadic and unknown.....	5	64	16	85
Contagion.....	7	4		11
Sewer-gas.....		3	2	5
Unsanitary surroundings.....		8	3	6
Dampness of house.....		7		7
Foul gas from well.....		1		1
Filth.....		1		1
Foreign.....		2	6	8
Location of deaths:				
Northwest.....	6	49	19	74
Southwest.....	1	15	3	19
Northeast.....	4	6	1	11
Southeast.....	1	6	2	9
West Washington.....		9	2	11

The foregoing table shows in a small space the number of investigations by quarters, condition of premises on which the case occurred, cause of infection, &c., of each of the three diseases, scarlet fever, diphtheria, and typhoid fever. In comparing the past year's work with that of the preceding, some marked changes may be noted; for instance, during the year ending June 30, 1880, 21 investigations were made as to the cause of scarlet fever, for the past year but 12 have been made; diphtheria caused but 24 investigations during the former year, and 85 for the past; typhoid fever 64 for the former and but 27 during the last year.

The following statement shows the number of deaths from diphtheria, croup, and scarlet fever for the 2 quarters of each of the past 7 years when these diseases are the most prevalent:

Period.	Deaths from—		
	Diphtheria.	Croup.	Scarlet fever.
Quarter ending December 31, 1874.....	4	9	2
Quarter ending March 31, 1875.....	8	20	6
Quarter ending December 31, 1875.....	11	17	8
Quarter ending March 31, 1876.....	16	23	8
Quarter ending December 31, 1876.....	15	20	27
Quarter ending March 31, 1877.....	17	16	38
Quarter ending December 31, 1877.....	68	35	35
Quarter ending March 31, 1878.....	31	12	45
Quarter ending December 31, 1878.....	29	25	39
Quarter ending March 31, 1879.....	19	15	51
Quarter ending December 31, 1879.....	12	22	13
Quarter ending March 31, 1880.....	7	10	7
Quarter ending December 31, 1880.....	59	44	6
Quarter ending March 31, 1881.....	25	19	7
Total.....	319	287	292

It will be seen by this that there is a closer relation between diphtheria and croup than between either of them and scarlet fever; this is shown in all the quarters except the three ending December 31, 1877, March 31, 1878, and March 31, 1880.

During the past year there has been a decided increase of deaths from diphtheria, but there has been also a decided decrease of deaths from other diseases, typhoid and scarlet fevers included. The general healthfulness of any place should be determined by the rate of the total mortality, and not on account of an unusually large or small number of deaths the causes of which may be classed under one or more names. By selecting one or more causes of death for comparison, any place may prove itself the healthiest locality in the country.

I would renew this year the recommendations made in my report to you last year, regarding a thorough topographical and geological survey of the District, &c., and in addition would suggest that some measure be taken by which we could ascertain the depth of "the ground water." Wells might be sunk for this purpose in different portions of the city, or possibly some of the present wells could be used for the purpose. This process of investigation would certainly remove some of the doubts in the minds of the people as to the relation of damp soil to phthisis, diarrhoeal diseases, and how many more we cannot tell. Wells used for this purpose might be "driven" and no water should be allowed to be taken from them. The cost for this investigation would be but slight compared with the probable good to be obtained by it. I would also recommend that investigations be made for the purpose of helping on the discoveries in regard to disease germs, their culture, and their modified effects upon the system when so cultured. M. Pasteur, M. Chauveau, Dr. Farr, Prof. Burdon Sanderson, M. Toussaint, Kelbs, and Tommasi-Crudeli, and George M. Sternberg, surgeon, United States Army, are, with many others, working out results of the greatest moment to mankind in this direction. Undoubtedly some of these investigators will yet discover the remedy by which scarlet fever, diphtheria, and perhaps typhoid fever may be rendered as harmless as small-pox by vaccination. No better place than Washington could be selected for the purpose of these investigations, and I hope you will give this subject such consideration as you think it deserves.

In my last report to you will be found the following:

Physicians even of but limited practice have known cases where on no basis of known facts could the germ (if there is such a thing) of scarlet fever be traced. A theory may be a very plausible and valuable help in explaining occult matters, but it takes more than its continued iteration to make the theory an established or accepted fact."

I have to confess that the grand result of M. Pasteur's work, in discovering means of completely protecting, sheep, cattle, and horses from the scourge of "splenic fever" or "charbon" by vaccinating them with the "cultured" anthrax bacillus, the very germ that in its natural state produces this disease, causing such terrible ravages among them, has cleared away from my mind much of the mist and doubt that had settled down upon the "germ theory" of disease.

With such a result before us, the question arises, Why may not this be done for all germ diseases? I believe it will be; and that we shall yet be able to protect our children from the scourge of scarlet fever, diphtheria, &c., as we are now from small-pox; possibly consumption

* Report of Health Officer, D. C., 1880, pp. 51, 52.

may be brought into the list. Certainly the subject is large and the field open for all.

THEO. MEAD, M. D.,
Medical Sanitary Inspector.

SMITH TOWNSHEND, M. D.,
Health Officer, District of Columbia.

VITAL STATISTICS.

The population of the District of Columbia on June 30, 1881, is estimated at 183,060 (white, 121,300; colored, 61,760). This estimate is reached by calculating the increase in same ratio as that given by the census of 1880 for the ten years preceding. The percentage of increase per annum as shown by the census is at the rate of 3.052; that of the colored population, 3.97; white population, 2.59.

During the year ending June 30, 1881, there occurred in the District of Columbia 4,136 deaths. Of this number 1,179 were white males; 1,026 white females; 921 colored males, and 1,010 colored females; showing an annual death-rate of 18.18 per 1,000 per annum for the white, 31.27 for the colored, and 22.59 for the total population. The still-births foot up 370, and there were 3,595 births and 813 marriages reported.

The history of our mortality during the six years ending June 30, 1881, is clearly illustrated in the following tabular statement (statement "A"), and the exhibit is a satisfactory showing of our steady and continued improvement in healthfulness. The evidence of advance in the right direction is established by the record of annual death-rates; a gradual decrease year by year is shown. In 1876 the rate per 1,000 per annum was 26.35; for the past year but 22.59, showing a decrease of 3.76 per 1,000. Now let us pause for a moment and see what this means. With our population of 183,060, a saving of life at the rate of 3.76 per 1,000 means that (as compared with the year 1876) the lives of nearly 700 of our population were saved last year. This is indeed very satisfactory.

The colored population shows a very marked decrease in its death-rate. From 40.74 per 1,000 in 1876 it has fallen to 31.27 for the past year, a decrease of 9.47 per 1,000. This tells of decided improvement in the sanitary condition of the colored population. The mean annual death-rate for the white population for these 6 years is 18.93, for the colored 36.57, and for the total 24.75.

STATEMENT A.

Years.	Population.			Deaths.			Death-rates.		
	White.	Colored.	Total.	White.	Colored.	Total.	White.	Colored.	Total.
1876	106,741	50,859	157,600	2,090	2,072	4,162	19.58	40.74	26.35
1877	109,505	52,870	162,375	2,190	2,014	4,204	20.00	37.39	25.89
1878	112,340	54,960	167,300	2,167	2,068	4,235	19.29	37.63	25.32
1879	115,247	57,053	172,300	2,196	2,113	4,309	19.06	37.03	25.00
1880	118,236	59,402	177,638	2,085	2,121	*4,207	17.63	35.71	23.68
1881	121,300	61,760	183,060	2,205	1,931	4,136	18.18	31.27	22.59
Mean annual death-rate for the six years							18.93	36.57	24.75

* One included in the total whose color could not be determined.

Statement B, which follows, gives further evidence of this improved condition. This statement shows a decrease in the deaths among the infant population, and also increased ages of the decedents. For instance, among the white males the percentage of deaths to the total of persons 5 years of age and over has increased from 59.6 in 1876 to 67 for the past year, or at the rate of 7.4; persons 20 years of age and over from 53 per cent. to 60.7, an increase of 7.7; persons 40 years of age and over from 35.1 per cent. to 43, an increase of 7.9. Among the white females 5 years of age and over the increase has been from 56.7 to 69.6, or 13.2 per cent.; persons 20 years and over from 47.6 per cent. to 59.6, an increase of 12; persons 40 years and over from 30.4 per cent. to 39.4, an increase of 9. Although this shows the greater increase of percentage to be with the white females, still the mean percentage for the 6 years to the total deaths among this class for each of these periods of life is less than the same among the white males; the percentage at each of these ages among the latter being greater than among the white females. Among the colored males the increase of the percentage to total deaths of persons 5 years of age and over is from 39.4 to 46.1, or 6.7; persons 20 years of age and over from 31.8 per cent. to 37.9, an increase of 6.1; persons 40 years and over from 17.4 per cent. to 22.7, an increase of 5.3. Among the colored females 5 years of age and over, the increase has been from 44 per cent. in 1866 to 52.1 for the past year, or 8.1; 20 years of age and over from 34.3 percent. to 44.4, an increase of 10.1; 40 years of age and over from 19.2 per cent. to 23, an increase of 3.8.

It will be noticed that the mean percentages for the colored females are greater than for colored males, and the percentages of the total white decedents are greater than those for the total colored.

STATEMENT B.

	White males, year ending June 30—						Total deaths and mean percentages to total deaths.
	1876.	1877.	1878.	1879.	1880.	1881.	
Total deaths	1, 108	1, 149	1, 123	1, 130	1, 097	1, 179	6, 786
5 years and over.							
Number of deaths	600	725	683	689	711	790	4, 258
Percentage to total deaths	59.6	63.1	60.8	61.0	64.8	67.0	62.8
20 years and over.							
Number of deaths	588	633	568	552	641	716	3, 698
Percentage to total deaths	53.0	55.1	50.6	48.8	58.4	60.7	54.9
40 years and over.							
Number of deaths	380	432	380	384	459	507	2, 551
Percentage to total deaths	35.1	37.6	33.8	34.0	41.9	43.0	37.6

Statement B—Continued.

	White females, year ending June 30—						Total deaths and mean per- centages to total deaths.	Total white.
	1876.	1877.	1878.	1879.	1880.	1881.		
Total deaths.....	982	1,041	1,044	1,066	968	1,026	6,147	12,633
5 years and over.								
Number of deaths.....	557	621	653	647	592	717	3,787	8,045
Percentage to total deaths.....	56.7	59.7	62.5	60.7	59.9	69.6	61.6	62.2
20 years and over.								
Number of deaths.....	467	522	541	535	529	611	3,205	6,903
Percentage to total deaths.....	47.6	50.1	51.8	50.2	53.5	59.6	52.1	53.5
40 years and over.								
Number of deaths.....	299	339	354	334	351	404	2,081	4,632
Percentage to total deaths.....	30.4	31.6	33.9	31.3	35.5	39.4	33.8	35.9
	Colored males, year ending June 30—						Total deaths and mean per- centages to total deaths.	Total colored.
	1876.	1877.	1878.	1879.	1880.	1881.		
Total deaths.....	1,008	990	1,007	1,051	1,025	921	6,002	
5 years and over.								
Number of deaths.....	397	417	394	430	407	425	2,470	
Percentage to total deaths.....	39.4	42.1	39.1	40.9	39.7	46.1	41.1	
20 years and over.								
Number of deaths.....	321	337	311	344	325	340	1,987	
Percentage to total deaths.....	31.8	34.0	30.9	32.7	31.7	37.9	33.1	
40 years and over.								
Number of deaths.....	175	206	197	211	186	209	1,184	
Percentage to total deaths.....	17.4	20.8	19.6	20.2	18.1	22.7	19.7	
	Colored females, year ending June 30—						Total deaths and mean per- centages to total deaths.	Total colored.
	1876.	1877.	1878.	1879.	1880.	1881.		
Total deaths.....	1,064	1,024	1,061	1,062	1,096	1,010	6,317	12,319
5 years and over.								
Number of deaths.....	468	518	504	523	537	526	3,076	5,546
Percentage to total deaths.....	44.0	50.6	47.5	49.2	49.0	52.1	48.5	45.0
20 years and over.								
Number of deaths.....	365	396	374	424	434	449	2,442	4,429
Percentage to total deaths.....	34.3	38.7	35.2	39.9	39.6	44.4	38.7	36.0
40 years and over.								
Number of deaths.....	204	221	208	230	237	232	1,332	2,516
Percentage to total deaths.....	19.2	21.6	19.6	21.6	21.6	23.0	21.1	20.4

Of the total decedents last year, 53.31 per cent. were white and 46.69 colored. The white males aggregated 28.5 per cent. of the total deaths,

and 53.47 per cent. of the white decedents; the white females 24.81 per cent. of the total deaths, and 46.53 per cent. of the white decedents; the colored males 22.27 per cent. of the total deaths, and 47.7 per cent. of the colored decedents; the colored females 24.42 per cent. of the total deaths, and 52.3 per cent. of the colored decedents.

Table I exhibits according to age, color, sex, nativity, by months and classes, orders and specific names, as well as annual death-rates per 1,000, a detailed statement of the mortality for the year. There are 5 classes arranged in 22 orders, showing 271 names of specific diseases or causes of death; of the latter, 56 are causes given under the head of violence, leaving 215 as the actual number of diseases.

I.—ZYMOTIC DISEASES.

From this class of diseases there were 907 deaths, or 21.98 per cent. of the total mortality; the greater number, 768, being of the miasmatic order, and the ones usually meant by the term "zymotic." There were 265 deaths—128 white and 137 colored—from the diarrhoeal diseases; 212—87 white and 125 colored—being of children under five years of age; from malarial fevers there were 130 deaths—58 white, 72 colored—being 62 more than for the year preceding. Malarial fevers, and also typhoid, have been more than usually prevalent throughout the whole country; and probably the percentage of increase is not much, if any, greater here than in other places. Diphtheria caused 124 deaths—106 white, 18 colored—being 95 more than for the preceding year. Croup proved fatal to 89 children—64 white, 25 colored—being 44 in excess of the year before. Sixty-seven deaths—44 white, 23 colored—were caused by typhoid fever; being 17 less than the previous year. From scarlet fever there were 26 deaths—25 white, 1 colored—being 2 less than the year before. Whooping-cough caused 19 deaths—9 white, 10 colored—being 41 less than the previous year. It would seem from these figures that colored persons are much less fatally affected by the exanthematous diseases and diphtheria than white persons. This fact is not only shown by the records of this office, but is also shown by the reports received from other health authorities. There was but one fatal case of small-pox during the year, and that occurred in the case of a man who came from Philadelphia on a vessel, and was fully broken out with confluent variola when he arrived. But 19 deaths were ascribed to syphilis; 15 of these occurring among children under five years of age, congenital cases, the sins of the parents being visited upon the children. The deaths of 92 children were charged to inanition simply; possibly many of these would have been more properly classed with congenital debility. Excessive use of alcohol caused 19 deaths.

II.—CONSTITUTIONAL DISEASES.

Constitutional diseases caused 1,080 deaths, or 26.11 per cent. of the total mortality. The decedents were, 274 white males, being 23.24 per cent. of their total mortality; 269 white females, or 26.16 per cent. of their total mortality; 225 colored males, or 24.43 per cent. of their total mortality; and 312 colored females, 30.89 per cent. of their total mortality. The annual death-rate for the white population from these diseases was 4.40, and for the colored 8.69. Cancer and phthisis, two diseases which, from their importance to physicians and their patients, demand all possible examination and illustration, are classed under this head. A series of tables giving all the information that may be ob-

tained from the certificates of death from these two diseases occurring in this District from September 1, 1874, to June 30, 1881, are given in this report; and the attention of the medical profession, and all others interested, is invited thereto.

During the past year there have been 87 deaths from cancer, an increase of 16 over the year before; they are distributed by color and sex as follows: White males, 17; white females, 47; colored males, 1; and colored females, 22. The increase of white decedents was 14, colored 2. There were 10 cases of cancer of breast—8 white, 2 colored; 27 of the uterus—22 white, 5 colored; 3 of the ovary—2 white, 1 colored; and 18 of the stomach—11 white, 7 colored.

In comparing the deaths from cancer for the past year with the total deaths since September 1, 1874, the following significant facts are noted:

First. The annual death-rate for the past year among white decedents was .527 per 1,000; for the full time since September 1, 1874, it was .457, an increase of .07; the percentage to total deaths for the past year was 2.902; for the full time 2.37, an increase of .532.

Second. The annual death-rate for the past year among colored decedents was .372; for the full time .361, an increase of .012; the percentage to total deaths for the past year was 1.191; for the full time .96, an increase of .231. The experience of one year, however, is not sufficient to predicate an assumption of an actual increase in prevalence of the disease.

About two-thirds of all the deaths from cancer are of persons above 50 years of age, and less than one-tenth under 30 years of age.

The tubercular order is of great importance. Diseases of this order proved fatal to 934 persons during the year—238 white males, 206 white females, 213 colored males, and 277 colored females. Phthisis pulmonalis or consumption belongs to this order and furnishes 759 decedents, or 18.35 per cent. of the total mortality; 367 were white and 392 colored, or 16.64 per cent. of the total white and 20.30 per cent. of the total colored mortality; the annual death-rate per 1,000 for each color being 3.03 for the white and 6.34 for the colored. The mean annual death-rate from phthisis since September 1, 1874, has been 3.02 for the white population and 6.94 for the colored; this shows an increase of .01 per 1,000 among the white and a decrease of .64 per 1,000 for the colored population during the past year. The percentage of deaths from phthisis to total deaths from all causes since the 1st of September, 1874, has been 15.68 for the white and 18.44 for the colored, showing an increased percentage for the past year of .96 for the white and 1.86 for the colored population. For the past year there have been 12 deaths of white children under 5 years from phthisis, and 70 colored; the percentage of these deaths to total deaths under 5 years of age was 1.72 for the white and 7.14 for the colored; the percentage of those dying under 5 years of age from phthisis to the total deaths from the same was 3.21 for the white and 17.60 for the colored; the annual death-rate per 1,000 of those dying of phthisis under 5 years of age was .099 for the white and 1.133 for the colored; for the whole time between September 1, 1874, and June 30, 1881, the percentage of deaths of children from phthisis under 5 years of age to total deaths under 5 years of age was 1.33 for the white and 5.89 for the colored, showing an increased percentage for the past year over the full time of .39 for the white and 1.25 for the colored; the percentage of the deaths from phthisis under 5 years of age to total deaths from phthisis for the full time has been 3.22 for the white and 17.53 for the colored, showing an increased percentage for the past year over the

full time of .02 for the white and .07 for the colored; the mean annual death-rate per 1,000 for those dying from phthisis under 5 years of age for the full time has been .097 for the white and 1.218 for the colored, showing an increased rate for the past year over the full time of .002 for the white and a decreased rate of .085 for the colored.

III.—LOCAL DISEASES.

The local diseases are those affecting the different organs of the body, and they are divided in eight orders and enumerated in Table No. 1, under 114 specific diseases. These diseases usually consist of congestions or inflammations, atrophies, or hypertrophies, and sometimes deposits of extraneous matter, such as the calculus, or the result of some one of these conditions. In this class we have 1,550 deaths, or 37.48 per cent. of the total mortality; 461 white males, 334 white females, 392 colored males and 363 colored females, being 36.06 per cent. of the total white and 39.10 per cent. of the total colored mortality. From diseases of the nervous system there were 534 decedents, of which 288 were white and 246 colored. From the principal diseases under this order we have the following number of deaths: Acute diseases of the nervous system, 70 white, 37 colored; apoplexy, paralysis, and softening of the brain, 122 white, 66 colored; convulsions (idiopathic), 35 white, 133 colored; insanity, 33 white, 5 colored; epilepsy, 7 white, 5 colored. From diseases of the circulatory organs there were 169 deaths, 136 being of disease of the heart; 73 of the latter were of whites and 63 colored; 11 persons died of aneurism, 6 white, 5 colored; 8 of these aneurisms were of the aorta. Diseases of the respiratory organs furnished 525 of the decedents, 218 being white and 307 colored; of these pneumonia and bronchitis supplied 429—white 164, colored 265. The number of deaths from these two last-mentioned diseases of children under 5 years of age was 281, 81 white and 203 colored. Diseases of the digestive organs were fatal in 211 cases, 129 white, 82 colored. From diseases of the stomach there were 35 white and 8 colored decedents; of the intestines, 24 white, 25 colored; liver, 31 white, 8 colored. There were 14 cases of cirrhosis of the liver and two of gall stones; hernias, 6 white, 1 colored. Of the hernias 2 were scrotal, 3 inguinal, and 2 strangulated, the certifying physician failing to state it in his certificate and neglecting to inform this office upon inquiry being made of him by letter. There were 81 deaths from diseases of the urinary organs, 50 white, 31 colored, of which nephria, or Bright's disease, supplied 37, 22 being white and 15 colored. There were 10 deaths from diseases of the generative organs, all females, and 5 of each color. From diseases of the locomotory and integumentary organs there were 20 deaths, 10 white and 10 colored.

IV.—DEVELOPMENT DISEASES.

There were 453 deaths from diseases of this class—99 white males, 114 white females, 85 colored males, and 125 colored females. Under this class there are 4 orders and 26 diseases. The total deaths in this class constitute 10.95 per cent. of the total mortality, and an annual death-rate of 2.47 per 1,000 for the total population. The deaths in this class aggregate 11.02 per cent. of their total mortality, an annual death-rate of 2 in the 1,000. The colored deaths made 10.88 per cent. of their total mortality and an annual death-rate of 2.47 in the 1,000. The deaths of 200 children, caused by premature birth, or from some lack of proper development during their uterine life, are classed under this head; 103

of them were white and 97 colored; 45 women died from puerperal diseases; 6 from parturition direct, 8 from puerperal convulsions, 10 from puerperal fever, 7 from puerperal septicæmia, and 2 from pregnancy. From old age there were 197 deaths, as follows: 37 white males, 72 white females, 36 colored males, and 52 colored females.

V.—VIOLENCE.

There were 146 violent deaths reported during the year, 53 white males, 31 white females, 38 colored males, and 24 colored females, making 3.53 per cent. of total mortality and an annual death-rate of 0.8 per 1,000 for the total population; for the white population, 3.81 per cent. of their mortality and an annual death-rate of 0.7 per 1,000; and for the colored population 3.21 per cent. of their mortality, or an annual death-rate of 1 per cent. per 1,000. Under this class there are 4 orders and 56 specific causes of death. If the deaths by violence are excluded from the total mortality, the death-rates for the past year from *diseases* would be for total population 21.79 per 1,000; for white population 17.48, and for the colored 30.27. From accidents and negligence there were 116 deaths, some of the principal causes of which are as follows: Injuries from falls, 21 deaths; from the careless use of fire-arms, 6; railroad accidents, 4; drowned, 11; scalds, 4; burns, 15; neglect of the new-born, 4; street accidents, 8; overlaid by mother, 6; careless use of poisons, 4; traumatic tetanus, 4; surgical operations, 2. Two colored males were hanged for murder. The deaths by homicides numbered 17—4 white males, 4 white females, 5 colored males, and 4 colored females; 5 were killed by blows on their heads, 1 by penetrating wound of lung, 6 infanticides, 3 gunshot wounds, 1 by cut throat, and one by wilful neglect. During the year 11 white persons did "wilfully employed being as follows: By hanging, 2; drowning, 1; gunshot seek their own salvation" by committing suicide, the means wound, 1; burning, 1; cut-throat, 1; incised wound of arm, 1; cyanide of potassium, 1; arsenic, 1; corrosive sublimate, 1; laudanum, 1.

Of the table illustrating the births, still-births, and marriages reported it is not deemed necessary to make any remarks, as they sufficiently explain themselves.

Of the map showing the location of deaths but little need be said, except in regard to the one giving the location of the total mortality. The deaths by violence are not located on this map for the reason that the cause of their occurrence cannot be charged to the place of death, as the injury that produced the fatal result may have been received at some distant point, and ought not in any event prove a reflection on the sanitary condition of the place of death. All these locations are from the certificates of death received at this office, and are believed to be in the main correct.

The table of daily mortality and meteorological conditions is on the same plan as the one published in the last report, with the addition of the daily maximum and minimum temperature and range of the same. Sufficient data are not yet obtained to warrant an extensive analysis of mortality and meteorological relations. Yet that these relations do exist cannot be doubted. Although it is not yet time to base any positive statements on the data that have been published, still we may hazard the remark that daily mean temperature ranging above 70°, with a daily range between maximum and minimum of 20°, will very materially increase the deaths of children under 5 years of age, and with a high percentage of humidity and no rainfall there will be an increase of deaths from diseases of the nervous system and an increase of nervous

complications among all diseases. The following explanatory note from last report will sufficiently explain the use of the table:

EXPLANATORY NOTE.—The column of "daily rainfall" indicates that the amount was too small to measure.

In the "mortality" division, classified according to diseases, 75.65 per cent. of all the deaths appear. This division might, possibly, have been improved by a classification as to color of decedents. The number of children dying at the age of 7 days and under are also included in the column of those dying "under 5 years of age." Under the head of "malarial fever" are included the number dying of remittent, intermittent, malarial, congestive, pernicious, typho-malarial, and simple continued fevers. Under "acute diseases of the respiratory organs" are included pneumonia, bronchitis, pleuritis, and congestion of the lungs. Under "diseases of the nervous system" those cases of convulsions, congestion of the brain, &c., following, or complicated with, diarrhoeal diseases, or with any of the different fevers, diphtheria, whooping-cough, &c., are not included. All of these cases are classified under the primary diseases.

The Chief Signal Officer, U. S. A., furnished this office with the following items, under the head of "meteorological conditions": The daily and monthly mean of barometer and temperature (dry-bulb), and humidity; the 7 o'clock a. m., 2 and 9 o'clock p. m. observations of barometer, temperature (both dry- and wet-bulbs), humidity, direction and force of wind, state of weather, and rainfall. The other data were worked out by Dr. Theodore Mead, of this office.

The movements of the barometer are given in inches and decimals of an inch; the signs + and — show rise or fall of barometer and thermometer. The temperature is measured in degrees of the Fahrenheit scale.

The items in the column of "Resultant direction and force of wind" were obtained by platting—using the three daily observations as factors—and these should be read as follows: N. *northerly* and not north; S. *southerly* and not south; NE. *northeasterly* and not northeast, &c. Only when the *mean hourly force* of the wind agrees with the *resultant force*, should the abbreviations be read in the usual manner. On many days each observation indicates a change in direction and force of the wind, and the resultant direction and force only show the distance, in miles and direction, that a particle of air would be from the point of observation, were it acted upon by the united forces and directions of the wind, as ascertained by the three observations during one hour's time.

To obtain the amount of air passing the point of observations (in this case Washington), for any particular day, it will be necessary to multiply by 24 the number in the column of the "Mean force of wind per hour."

The items in the column of "State of weather," are, as near as possible, reasonable summaries of the state of weather as made at the three observations for each day.

For the past year the mean of barometer has been 30.07 inches, mean temperature 53.2°, mean percentage of humidity 70.6, and total rainfall 43.56 inches.

Following this last mentioned table are those illustrating the mortality in this District from September 1, 1874, to June 30, 1881. As the statistics of each year, added to those already tabulated, their interest and value will be increased, more especially in regard to the two diseases, cancer and phthisis. It is hoped that these tables will be found sufficiently self explanatory; they bring out so many valuable facts that their study in detail will amply repay any one interested in the subject.

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	Total deaths from each cause.	DEATH-RATE.		INCAPITULATION.										Per cent of total mortality.	
		Deaths per 1,000 inhab- itants.		Total by color and sex.					Total by sex.						
		W.	C.	W.					M.						
				M.	F.	M.	F.	C.	M.	F.	M.	F.	C.		
CLASS I.—ZYMOTIC DISEASES.															
Order 1.—Miasmatic.															
Small-pox	1	.024	.008	1	5	1	1	1	2	6	1	5	1	1	8
Measles	8	.193	.049	.032	39	25	16	9	64	25	34	32	20	16	7
Croup	89	2.132	.528	.404	45	61	8	10	106	18	53	71	27	38	4
Diphtheria	124	2.968	.874	.291	11	14	1	1	23	1	11	15	9	8	17
Scarlet fever	26	.629	.206	.016	24	29	13	10	44	23	37	30	2	2	2
Typhoid fever	67	1.620	.363	.372	4	2	4	6	6	5	5	6	1	1	1
Intermittent fever	11	.266	.049	.061	2	1	9	5	3	14	11	6	1	1	2
Remittent fever	17	.411	.025	.257	12	6	6	8	17	14	14	2	5	3	8
Typho-malarial fever	31	.749	.140	.627	13	19	22	17	32	39	37	36	5	4	15
Malarial fever	14	.338	.082	.085	6	4	2	2	10	4	8	5	2	1	9
Cerebro-spinal meningitis	28	.677	.165	.199	19	7	4	4	20	8	17	11	4	3	11
Dysentery	96	2.321	.297	.971	19	17	33	27	36	60	52	44	7	7	30
Diarrhoea	7	.169	.033	.048	2	2	2	3	4	3	2	5	2	2	1
Cholera morbus.	114	2.756	.495	.874	33	27	19	35	60	54	52	62	33	27	19
Infantum	23	.557	.066	.213	6	2	7	1	8	15	13	10	6	2	7
Enterocolitis	2	.048	.008	.048	1	1	1	1	1	1	2	2	5	4	2
Tonsillitis	19	.459	.074	.163	5	4	2	8	9	10	7	12	5	4	2
Whooping-cough	12	.290	.066	.065	2	6	2	2	8	4	4	8	1	1	1
Erysipelas	5	.121	.041	.065	4	1	1	1	5	2	4	1	1	1	4
Carbuncle	2	.048	.016	.027	1	1	1	1	1	1	1	1	1	1	1
Pneumia	1	.024	.008	.008	1	1	1	1	1	1	1	1	1	1	1
Hydrophobia	1	.024	.008	.008	1	1	1	1	1	1	1	1	1	1	1
Total miasmatic diseases	768	18.569	3.858	4.854	243	225	145	155	468	300	388	380	140	121	106
Order 2.—Euthetic.															
Syphilis, congenital	15	.363	.074	.097	4	5	4	2	9	6	8	7	4	5	4
secondary	2	.048	.008	.016	1	1	1	1	1	1	1	1	1	1	1
tertiary	2	.048	.008	.016	1	1	1	1	1	1	1	2	1	1	1
Total euthetic diseases	19	.459	.091	.129	5	6	4	4	11	8	9	10	4	5	4
Total															

TABLE 1.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1880.																							
	July.				August.				September.				Total first quarter.				October.				November.			
	W.	C.	M.	F.	W.	C.	M.	F.	W.	C.	M.	F.	W.	C.	M.	F.	W.	C.	M.	F.	W.	C.	M.	F.
Class I.—ZYMOTIC DISEASES.																								
Order 1.—Miasmatic.																								
Small-pox.....																								
Measles.....	1	2			4		2	1	3	4	1	1	8	6	3	2	7	5	1	7	2	4	1	6
Croup.....			2		5		1	7	7	2			8	12	2	3	6	18	2	1	5	9	2	7
Diphtheria.....	1	2			3		2						4	4		1	1							8
Scarlet fever.....	1	2	3	1	2	3	3	3	2		2		5	4	7	6	5	2	1	3	2	1	3	3
Typhoid fever.....																								
Intermittent fever.....	1												2	1		1	1			2	1			4
Remittent fever.....																								
Typho-malarial fever.....	2				1		2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Malaria fever.....	1	3			1	1	2	1	4	6	6	6	7	11	7	4	6	2	4	2	3	3	2	
Cerebro-spinal meningitis.....													2	2		1	1			1				
Dysentery.....	5	1	1		1		1	2	2	1			8	3	2	1	1			1	1	1	1	1
Dysentery.....	3	12	6		1	2	4	8	2	1	4	3	6	6	20	17	2	3	1	2	1	2	1	1
Cholera.....																								
Cholera morbus.....	8	0	2	13	4	5	7	3	2	3	2	3	8	16	9	23	3	2	2	2	1	1	1	1
Enterocolitis.....	2	1	2	4	1	1	1	1	2	2	4	2	4	2	7	1								
Toxæmia.....													1	4	2	1	2			1	1	1	1	1
Whooping-cough.....	4	1	2						2				4	2	1	2				1	3		1	1
Erysipelas.....													2	1			1							
Carbuncle.....					2																			
Pyæmia.....													2	1										
Hydrophobia.....																								
Total miasmatic diseases.....	28	23	24	32	17	18	20	23	27	29	21	20	72	69	65	75	31	34	15	18	17	23	10	21
Order 2.—Etiætic.																								
Syphilis, congenital.....																								
secondary.....																								
tertiary.....																								
Total etiætic diseases.....																								
Total onthætic diseases.....																								

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1880.												1881.											
	Total second quarter.						January.						February.						March.					
	W.	M.	F.	C.	M.	F.	W.	M.	F.	C.	M.	F.	W.	M.	F.	C.	M.	F.	W.	M.	F.	C.	M.	F.
CLASS I.—ZYMOTIC DISEASES.																								
Order 1.— <i>Miasmatic.</i>																								
Small-pox.																								
Measles.																								
Croup.	20	14	8	3	2	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
Diphtheria.	18	35	3	3	1	4	1	4	1	5	2	1	2	2	1	1	3	1	1	10	10	3	2	4
Scarlet fever.	3	3	3	3	2	3	7	1	1	1	1	1	1	1	1	1	1	1	4	3	1	2	1	3
Typhoid fever.	8	7	4	3	2	3	2	3	2	2	1	1	1	1	1	1	1	1	5	5	5	1	2	1
Intermittent fever.	1	1	1	2	2	1	2	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1
Remittent fever.	2	2	2	2	2	1	2	1	1	1	1	1	2	1	1	1	1	1	1	1	1	2	1	1
Typho-malarial fever.	4	2	2	2	2	7	1	1	1	1	1	1	2	1	1	1	1	1	2	2	2	3	1	2
Malarial fever.	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cerebro-spinal meningitis.	2	2	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1
Dysentery.	1	4	5	4	1	1	1	1	1	1	1	1	3	2	1	2	1	1	4	5	2	2	1	1
Diarrhea.	1	4	5	4	1	1	1	1	1	1	1	1	3	2	1	2	1	1	4	5	2	2	1	1
Cholera morbus.																								
Cholera infantum.	4	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Enterocolitis.																								
Tonsillitis.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Whooping-cough.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	3	1	1
Erysipelas.	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	1
Carbuncle.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pyæmia.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hydrophobia.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total miasmatic diseases.	69	84	34	31	12	20	3	6	16	9	9	12	8	4	4	4	36	33	16	22	12	10	5	6
Order 2.— <i>Enthetic.</i>																								
Syphilis, congenital.																								
secondary.	2	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
tertiary.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total enthetic diseases.	2	2	1	1	1	2	1	1	2	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1881.												AGE OF DECEDENT.														
	June.			Total fourth quarter.			Under 1 year.			1 to 2 years.			2 to 3 years.			3 to 4 years.			4 to 5 years.								
	W. C. F.			W. C. F.			W. C. F.			W. C. F.			W. C. F.			W. C. F.			W. C. F.								
	M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.				
CLASS I.—ZYMOTIC DISEASES.																											
Order 1.— <i>Miasmatic.</i>																											
Small-pox.....	1			3	4																						
Measles.....	2	1		4	3		4	2	5	3	8	7	5	2	10	7	3	1	5	1	2	1	5	3	1		
Croup.....	2	1		1	9	4	2	1	1	3	7	11	3	2	6	9			1	8	11	1	4	6			
Diphtheria.....	3	1		6	4	2	1																				
Scarlet fever.....																											
Typhoid fever.....																											
Intermittent fever.....																											
Remittent fever.....																											
Typho-malarial fever.....																											
Malaria fever.....	1	2		2	1	4	2	1	2	7	5	1	4	2	2	1	1	2		2	2	1	1	1			
Cerebro-spinal meningitis.....	2	1		1	6	1	2	2	3	1	1																
Dysentery.....	1	1		2	2	1	3	2	1	2	1																
Diarrhoea.....	5	4		1	8	2	6	4	7	3	19	15	3	9	4	1	1	1	1	1	1	1	1	1			
Cholera morbus.....																											
Cholera infantum.....	20	11		8	9	21	11	8	28	22	15	28	2	5	4	5	2	1	1	1	1	1	1	1			
Enteric colitis.....	1	3		1	3	1	3	1	4	1	6	6	1	1	1	1	1	1									
Tonillitis.....																											
Whooping-cough.....	1			1	1		1	3	2	1	1	2	1	5				1									
Erysipelas.....																											
Gastric ulcer.....	1	1		1	1		1	1	1	1	1																
Pyæmia.....																											
Hydrophobia.....																											
Total miasmatic diseases.....	39	19		15	66	39	30	27	56	37	61	85	28	35	20	24	26	22	7	8	15	17	8	15	10	4	2
Order 2.— <i>Etiætic.</i>																											
Syphilis, congenital.....	1			1	1	2	1	1	4	5	3	2														1	
secondary.....																											
tertiary.....																											
Total etiætic diseases.....	1			1	1	2	1	2	4	5	3	2														1	

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	AGE OF DECEASED.																											
	5 to 10 years.				10 to 20 years.				20 to 30 years.				30 to 40 years.				40 to 50 years.				50 to 60 years.				60 to 70 years.			
	W.	M.	F.	C.	W.	M.	F.	C.	W.	M.	F.	C.	W.	M.	F.	C.	W.	M.	F.	C.	W.	M.	F.	C.				
CLASS I.—ZYMOTIC DISEASES.																												
Order 1.— <i>Miasmatic.</i>																												
Small-pox.....																												
Measles.....																												
Croup.....	7	4	3	2	1	2	4	1	2	1	1	1	1	1	1	1												
Diphtheria.....	14	17	3	2	2	4	1	2	1	1	1	1	1	1	1	1												
Scarlet fever.....	2	3	1	2	2	3	5	3	1	9	7	1	6	2	3	2	1	2	2	1	2	1	2	1				
Typhoid fever.....	2	2	6	3	3	5	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
Intermittent fever.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
Remittent fever.....	1	1	2	2	2	1	1	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
Typho-malarial fever.....	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
Malarial fever.....	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
Cerebro-spinal meningitis.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
Dysentery.....																												
Diarrhoea.....																												
Cholera morbus.....																												
Infantum.....																												
Enterocolitis.....																												
Tonsillitis.....																												
Whooping-cough.....																												
Erysipelas.....	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
Carbuncle.....																												
Pyæmia.....																												
Hydrophobia.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
Total miasmatic diseases.....	27	30	13	10	8	15	7	8	13	15	6	10	7	13	5	9	13	8	1	3	14	9	4	2	15			
Order 2.— <i>Enthetic.</i>																												
Syphilis, congenital.....																												
secondary.....																												
tertiary.....																												
Total enthetic diseases.....																												

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	AGE OF DECEDENT.												SOCIAL RELATIONS.											
	70 to 80 years.						80 to 90 years.						90 to 100 years.						Above 100 yrs.					
	W.		C.		W.		C.		W.		C.		W.		C.		W.		C.		W.		C.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
CLASS I.—ZYMOTIC DISEASES.																								
Order 1.— <i>Miasmatic.</i>																								
Small-pox.....																								1
Measles.....																								1
Croup.....																								1
Diphtheria.....																								1
Scarlet fever.....																								1
Typhoid fever.....	1																							1
Intermittent fever.....		1																						1
Remittent fever.....																								1
Typho-malarial fever.....	1																							2
Malarial fever.....	2	2																						2
Cerebro-spinal meningitis.....																								2
Dysentery.....	1																							1
Diarrhoea.....	1																							2
Cholera morbus.....																								1
Cholera infantum.....																								1
Enterocolitis.....																								1
Tonsillitis.....																								1
Whooping-cough.....																								2
Erysipelas.....	1																							1
Carbuncle.....	1																							1
Pycemia.....																								1
Hydrophobia.....																								1
Total miasmatic diseases.....	5	6	2	1	2	1	3										33	23	8	15	26	13	7	8
Order 2.— <i>Enthetic.</i>																								
Syphilis, congenital.....																								1
secondary.....																								1
tertiary.....																								1
Total enthetic diseases.....																								1

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.	SOCIAL RELATIONS.						NATIVITY.											
	Widow or widower.			Unknown.			District of Columbia.				Other parts of United States.				Foreign.			
	W.		C.	W.	F.	M.	W.	F.	M.	C.	W.	F.	M.	C.	W.	F.	M.	C.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
CLASS I.—ZYMOTIC DISEASES.																		
Order 1.— <i>Miasmatic.</i>																		
Small-pox.....																		
Measles.....																		
Croup.....																		
Diphtheria.....																		
Scarlet fever.....																		
Typhoid fever.....																		
Intermittent fever.....																		
Remittent fever.....																		
Typho-malarial fever.....																		
Malarial fever.....																		
Cerebro-spinal meningitis.....																		
Dysentery.....																		
Diarrhoea.....																		
Cholera morbus.....																		
Cholera infantum.....																		
Enterocolitis.....																		
Tonillitis.....																		
Whooping cough.....																		
Erysipelas.....																		
Carbuncle.....																		
Pyæmia.....																		
Hydrophobia.....																		
Total miasmatic diseases.....	9	13	3	7	1	1	160	165	120	121	49	46	25	34	34	14		
Order 2.— <i>Enthetic.</i>																		
Syphilis, congenital.....																		
secondary.....							4	5	3	2	1		1					
tertiary.....															1			
Total enthetic diseases.....							4	5	3	2	1				1	2	1	

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	Total deaths from each cause.	DEATH-RATE.				RECAPITULATION.												Per cent. of each cause to total mortality.				
		Deaths per 1,000 inhabitants.				Total by color and sex.						Total by sex.			Total under 5 years.							
		W. C. M. F.				W. C. M. F. M. F. C.						W. C. M. F. C.			W. C. M. F. M. F. C.							
		W.	C.	M.	F.	W.	C.	M.	F.	C.	W.	C.	M.	F.	C.	W.	C.		M.	F.	C.	Total.
CLASS I.—ZYMOTIC DISEASES.																						
Order 3.—Dietic.																						
Insanition	92	2.224	.305	.890	24	13	28	27				37	55		52	40	24	13	28	27	92	2.224
Purpura	3	.072	.016	.016	1	1	1					2	1		2	1	1				2	.048
Delirium tremens	3	.072	.025		3							3										
Intemperance	16	.387	.115	.032	12	2	2					14	2		14	2						
Total dietic diseases	114	2.756	.462	.938	40	16	31	27				56	58		71	43	25	13	29	27	94	2.273
Order 4.—Pa astic.																						
Thrush	6	.145	.041	.016	4	1	1					5	1		5	1	4	1	1		6	.145
Total parasitic diseases	6	.145	.041	.016	4	1	1					5	1		5	1	4	1	1		6	.145
Total zymotic diseases	907	21.929	4.452	5.938	292	248	181	186				540	367		473	434	173	140	140	136	589	14.241
CLASS II.—CONSTITUTIONAL DISEASES.																						
Order 1.—Diathetic.																						
Gout	1	.024	.008		1							1			1							
Rheumatism	24	.560	.140	.113	10	7	3	4				17	7		13	11						
Rheumatic disease of heart	3	.072	.008	.032	1	1	1	1				1	2		1	2						
Dropsy	10	.232	.041	.081	1	4	2	3				5	5		3	7		2			2	.048
Anasarca	14	.338	.049	.129	3	3	5	3				6	8		4	6	1		1	1	2	.048
Cancer of abdominal organs	12	.048	.008	.016	1	1	1	1				1	1		1	1						
Cancer of breast	10	.232	.008	.032		8		2				2	8		2	10						
uterus	27	.633	.181	.061		22	5	2				22	5		27	8						
ovary	3	.072	.016	.016		2		1				2	1		3							
stomach	4	.096	.091	.113	4	7	1	2				11	7		4	14						
liver	1	.024	.016	.032	1	1	1	2				2	2		1	3						
scrotum	1	.024	.008		1							1			1							
face	2	.048	.016		1	1						2	1		1	1						
neck	1	.024	.008		1							1	1		1	1						
pancreas	1	.024	.008	.016	1	1						1	1		1	1						
mouth	2	.048	.008	.016	1	1		1				1	1		1	2						
fauces	1	.024	.008	.016	1	1						1	1		1	1						
omentum	1	.024	.008		1	1						1	1		1	1						

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1891.

1890.

Causes of death.	July.		August.		September.		Total first quarter.		October.		November.		December.	
	W. C.		W. C.		W. C.		W. C.		W. C.		W. C.		W. C.	
	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.
CLASS I.—ZYMOTIC DISEASES.														
Order 3.— <i>Dietic.</i>														
Inanition	3	6	3	4	6	1	4	4	1	3	13	7	8	11
Purpura														
Delirium tremens	1	2						1						
Intemperance								4	2					
Total dietic diseases	4	8	3	4	8	1	4	6	1	3	18	9	8	11
Order 4.— <i>Parasitic.</i>														
Thrush	1							1		1	1	1		
Total parasitic diseases	1							1		1	1	1		
Total zymotic diseases	32	31	27	36	25	19	24	27	34	29	24	25	91	79
CLASS II.—CONSTITUTIONAL DISEASES.														
Order 1.— <i>Dietetic.</i>														
Gout														
Rheumatism														
Rheumatic disease of heart														
Dropsey														
Anasarca														
Cancer of abdominal regions														
breast	2													
uterus	1													
ovary														
stomach														
liver														
scrotum														
neck														
pancreas														
mouth														
rectum														
fauces														
omentum														

Cause of death.	1880.												1881.											
	Total second quarter.						January.						February.						March.					
	Total second quarter.			January.			February.			March.			Total third quarter.			April.			May.					
	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.
CLASS I.—ZYMOTIC DISEASES.																								
Order 3.— <i>Dietic.</i>																								
Inanition	5	1	8	6			1	1	2	2	3	2	1	3	2	3	3	5	6	1	1	1	2	3
Purpura	1																							1
Dellirium tremens	3				1	1							1					4	2					
Intemperance																								
Total dietic diseases	9	1	8	6	1		1	1	2	3	3	5	1	3	2	7	3	7	6	2	2	1	2	4
Thrush	1																	1						
Total parasitic diseases	1																							
Total zymotic diseases	81	87	43	37	14	22	5	7	19	11	12	15	13	5	7	6	46	38	24	28	16	13	7	17
CLASS II.—CONSTITUTIONAL DISEASES.																								
Order 1.— <i>Dietetic.</i>																								
Gout						1												1						
Rheumatism	1	1	2						1				2	1				2	2		4	2	1	1
Rheumatic disease of heart	1	1																						
Dropsy	1	1	1	1					1				1					1	2	3	1	1	1	1
Anasarca	1	1	1	1																				
Cancer of abdominal organs						2		1					1					2	1					
Breast	4	2	2			2							2					2	2					
Uterus																								
Ovary	2	2							2				1					2	1					
Stomach	2	1							1				1				1	2	1		1			
Liver																								
Spleen	1	1							1									1	1					
Face																								
Neck	1	1																						
Throat																								
Mouth	1	1																						
Rectum																								
Fauces	1	1																						
Omentum	1	1																						

TABLE I.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1881.												AGE OF DECEASED.																																
	June.						Total fourth quarter.						Under 1 year.						1 to 2 years.						2 to 3 years.						3 to 4 years.						4 to 5 years.								
	W.		C.		Total		W.		C.		Total		W.		C.		Total		W.		C.		Total		W.		C.		Total		W.		C.		Total		W.		C.		Total				
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.					
CLASS I.—ZYMOTIC DISEASES.																																													
Order 3.— <i>Dietic.</i>																																													
Inanition	1	3	2	3	2	7	4	21	12	25	23	1	1	2	2	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Purpura	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Delirium tremens	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Intemperance	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Total dietic diseases	2	1	3	2	6	3	8	4	22	12	26	23	1	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Order 4.— <i>Parasitic.</i>																																													
Thrush	1	1	1	1	1	1	1	2	1	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2	2
Total parasitic diseases	1	1	1	1	1	1	1	2	1	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2	2
Total zymotic diseases	41	21	22	18	74	44	39	33	84	55	91	90	31	36	38	26	22	8	10	17	8	15	10	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
CLASS II.—CONSTITUTIONAL DISEASES.																																													
Order 1.— <i>Diathetic.</i>																																													
Gout	2	1	1	7	4	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Rheumatism	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Rheumatic disease of heart	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Dropsy	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Anasarca	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cancer of abdominal regions	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
breast	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
uterus	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ovary	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
stomach	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
liver	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
scrotum	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
face	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
neck	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
pancreas	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
mouth	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
rectum	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
fauces	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
omentum	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	AGE OF DECEDENT.												SOCIAL RELATIONS.					
	70 to 80 years.			80 to 90 years.			90 to 100 years.			Above 100 yrs.			Married.			Single.		
	W.		C.	W.		C.	W.		C.	W.		C.	W.		C.	W.		C.
	M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.	
CLASS I.—ZYMOTIC DISEASES.																		
Order 3.— <i>Dietic.</i>																		
Inanition																		
Purpura																	1	
Delirium tremens																	1	
Intemperance																	4	1
Total dietic diseases																	5	1
Order 4.— <i>Parasitic.</i>																		
Thrush																		
Total parasitic diseases																		
Total zymotic diseases	5	6	3	1	2	1	3						41	35	9	15	32	14
CLASS II.—CONSTITUTIONAL DISEASES.																		
Order 1.— <i>Diatetic.</i>																		
Gout																		
Rheumatism	2			1									5	1	3	2	1	1
Rheumatic disease of heart														1	1			
Dropsy			1										1	1	3		1	
Anasarca	1				1								1	2	3		1	
Cancer of abdominal organs																		
breast			1										1		1			
uterus	1												4				3	
ovary													18			5	1	
stomach																		
liver	3		1				1						2		1	3	1	1
scrotum													1				1	
face																		
neck													1	1		1		
pancreas																		
mouth																		
rectum													1				1	
fauces																1	1	
omentum													1					

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	SOCIAL RELATIONS.										NATIVITY.																								
	Widow or widower.					Unknown.					District of Columbia.					Other parts of United States.					Foreign.					Unknown.									
	W.		C.		M.	W.		C.		M.	W.		C.		M.	W.		C.		M.	W.		C.		M.	W.		C.		M.	W.		C.		
	M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.	M.	F.	M.	F.
CLASS I.—ZYMOTIC DISEASES.																																			
Order 3.— <i>Dietic.</i>																																			
Insanition																																			
Purpura																																			
Delirium tremens																																			
Intemperance	1	1																																	
Total dietic diseases	1	1																																	
Order 4.— <i>Parasitic.</i>																																			
Thrush																																			
Total parasitic diseases																																			
Total zymotic diseases	10	14	3	8	1																														
CLASS II.—CONSTITUTIONAL DISEASES.																																			
Order 1.— <i>Dietetic.</i>																																			
Gout	1																																		
Rheumatism	3	3																																	
Rheumatic disease of heart																																			
Dropsy	2																																		
Anasarca	1	1																																	
Cancer of abdominal organs																																			
breast	1																																		
uterus	3																																		
ovary	2																																		
stomach	2																																		
liver	1	6																																	
pancreas																																			
scrotum																																			
face																																			
neck																																			
pancreas																																			
mouth																																			
rectum																																			
fauces																																			
quintum																																			

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH RATES, FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.	Total deaths from each cause.	Per cent. of each mortality.	DEATH RATE.				HCAPITULATION.								Total					
			Deaths per 1,000 inhab. itants.				Total by color and sex.				Total by sex.					Total under 5 years.				
			W.		C.		W.		C.		W.		C.			W.		C.		
			M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		M.	F.	M.	F.	
CLASS II.—CONSTITUTIONAL DISEASES.																				
Order 1.— <i>Diathetic</i> —Continued.																				
Cancer of intestines.	1	.024	.008																	
right labium	1	.024	.016																	
parotid gland	1	.024	.016																	
leg.	1	.024	.008																	
bladder	1	.024	.008																	
ear	1	.024	.008																	
duodenum	2	.048	.008	.016																
thigh	2	.048	.016																	
throat	2	.048	.016																	
noe	1	.024	.008																	
Cholesteremia.	1	.024	.008	.016																
Hodgkin's disease	2	.048	.008	.016																
Anemia	2	.048	.008	.016																
Leucocythemia	3	.072	.025																	
Total diathetic diseases.	146	3.530	.816	.760		36	63	12	35	99	47	48	98	1	2	1	4		.007	
Order 2.— <i>Tubercular</i> .																				
Scrofula	25	.604	.074	.259		7	2	10	6	9	16	17	8	4	1	7	3	15		.363
Pneum. abscess.	3	.072	.016			2		1		2		3								
Rickets	13	.314	.210					6	7		13	6	7			6	7	13		.314
Tuberculosis	33	.798	.165	.210		11	9	4	9	20	13	15	18	4	3	3	6	16		.397
Meningitis and tuberc. meningitis	62	1.500	.298	.599		15	10	18	19	25	37	33	29	13	8	15	15	51		1.233
Phthisis pulmonalis	759	18.351	3.028	8,343		194	173	163	229	367	392	357	402	7	5	31	39	82		1.983
Hydrocephalus	12	.280	.066	.065		3	5	2	2	8	4	5	7	2	3	5	1	2		.286
Tubercular meningitis	21	.508	.089	.146		6	6	7	2	12	9	13	8	3	4	7		14		.338
enteritis	1	.024	.016																	
peritonitis	3	.072	.048					1	1	2	3	1	2							
bronchitis	1	.024	.008	.016																
Hip disease	1	.024	.008																	
Total tubercular diseases	934	22.582	3.081	7.929		238	206	213	277	444	490	451	483	34	26	70	73	203		4.908
Total constitutional class	1,080	26.112	4.477	8.689		274	269	225	312	543	537	499	581	35	26	72	74	207		5.005

TABLE 1.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1880.											
	July.			August.			September.			Total first quarter.		
	W.	C.	M. F.	W.	C.	M. F.	W.	C.	M. F.	W.	C.	M. F.
CLASS II.—CONSTITUTIONAL DISEASES.												
Order 1.— <i>Diathectic</i> —Continued.												
Cancer of intestines.....												
right labium.....												
parotid gland.....												
log.....												
bladder.....												
sac.....												
thigh.....												
throat.....												
nose.....												
Cholesteatoma.....												
Hodgkin's disease.....												
Anemia.....												
Leucocythemia.....												
Total diathetic diseases.....	1	4	1	5	1	4	5	2	1	5	14	3
Order 2.— <i>Tubercular</i> .												
Scrofula.....												
Pneumonia.....												
Rickets.....												
Tuberculosis.....												
Marasmus and tabes mesenterica.....												
Sphilitis pulmonalis.....												
Hydrocephalus.....												
Tubercular meningitis.....												
enteritis.....												
peritonitis.....												
bronchitis.....												
Hip disease.....												
Total tubercular diseases.....	16	19	11	17	20	17	19	17	13	16	19	50
Total constitutional class.....	17	23	11	18	17	25	18	19	21	18	20	55

TABLE I.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTH AND QUARTER, WITH PERCENTAGES AND DEATH-RATES FOR THE YEAR ENDING JUNE 30, 1881.

1880.

1881.

Cause of death.	Total second quarter.												Total third quarter.												April.												May.											
	January.						February.						March.																																			
	W.			C.			W.			C.			W.			C.			W.			C.			W.			C.			W.			C.			W.			C.								
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.						
CLASS II.—CONSTITUTIONAL DISEASES.																																																
Order 1.—Diathetic—(continued).																																																
Cancer of intestines.....																																																
right labium.....																																																
parotid gland.....																																																
leg.....																																																
bladder.....																																																
ear.....																																																
duodenum.....																																																
thigh.....																																																
throat.....																																																
nose.....																																																
Cholesteremia.....																																																
Hodgkin's disease.....																						</																										

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1881.												AGE OF DECEDENT.																													
	June.						Total fourth quarter.						Under 1 year.						1 to 2 years.						2 to 3 years.						3 to 4 years.						4 to 5 years.					
	W.		C.		Total		W.		C.		Total		W.		C.		Total		W.		C.		Total		W.		C.		Total		W.		C.		Total							
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.								
CLASS II.—CONSTITUTIONAL DISEASES.																																										
Order 1.— <i>Diathetic</i> —Continued.																																										
Cancer of intestines.....																																										
right labium.....																																										
parotid gland.....																																										
leg.....																																										
bladder.....																																										
ear.....																																										
duodenum.....																																										
thigh.....																																										
throat.....																																										
nose.....																																										
Cholesteræmia.....																																										
Hodgkin's disease.....																																										
Anæmia.....																																										
Leucocythæmia.....																																										
Total diathetic diseases.....	2	6	1	7	9	20	4	13					1	1					2																							
Order 2.— <i>Tubercular</i> .																																										
Scrofula.....	1		2		2		3	1	2				2	2		4	1																									
Psoas abscess.....																																										
Rickets.....																																										
Tuberculosis.....																																										
Marasmus and tabes mesenterica.....	2		1	3	2	1	3	3	7	6	8	8	2	1	5	3	2	1	1	4	1																					
Phtisis pulmonalis.....	14	11	16	14	53	35	56	66	4	2	9	9	3	2	11	12	1	1	6	11																						
Hydrocephalus.....	1		1		1		1		1	5																																
Tubercular meningitis.....																																										
enteritis.....																																										
peritonitis.....	1																																									
bronchitis.....																																										
Hip disease.....																																										
Total tubercular diseases.....	18	13	21	17	61	41	65	78	15	13	23	23	9	8	24	23	5	3	15	17																						
Total constitutional class.....	20	19	22	24	70	61	69	91	15	13	23	24	10	8	24	23	5	3	17	17																						

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	AGE OF DECEDENT.												SOCIAL RELATIONS.					
	70 to 80 years.						80 to 90 years.						90 to 100 years.					
	W.	M.	F.	C.	W.	C.	W.	M.	F.	C.	W.	C.	W.	M.	F.	C.	W.	C.
Cause of death.	M.	F.	C.	W.	M.	F.	C.	W.	M.	F.	C.	W.	M.	F.	C.	W.	M.	F.
	Single.	Married.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.
CLASS II.—CONSTITUTIONAL DISEASES.																		
Order 1.— <i>Diabetic</i> .—Continued.																		
Cancer of intestines.....																		
right labium.....																		
parotid gland.....																		
leg.....																		
bladder.....																		
ear.....																		
duodenum.....																		
thigh.....																		
throat.....																		
nose.....																		
Cholesteramia.....																		
Hodgkin's disease.....																		
Anemia.....																		
Leucocythæmia.....																		
Total diathetic diseases.....	5	5	4	2	1	1	1						19	30	8	20	7	8
Order 2.— <i>Tubercular</i> .																		
Scrofula.....																		
Pecce abscess.....																		
Rickets.....																		
Tuberculois.....																		
Marasmus and tabes mesenterica.....																		
Phtisis pulmonalis.....																		
Hydrocephalus.....																		
Tubercular meningitis.....																		
enteritis.....																		
peritonitis.....																		
bronchitis.....																		
Hip disease.....																		
Total tubercular diseases.....	5	3	3	5	1		1	2					82	84	58	86	42	48
Total constitutional class.....	10	8	3	9	3	1	2	3					101	114	66	106	92	56

TABLE 1.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	SOCIAL RELATIONS.						NATIVITY.											
	Widow or widower.						Unknown.						District of Columbia.					
	W.	M.	F.	M.	F.	C.	W.	M.	F.	M.	F.	C.	W.	M.	F.	M.	F.	C.
CLASS II.—CONSTITUTIONAL DISEASES.																		
Order 1.— <i>Diathectic</i> —Continued.																		
Cancer of intestines.....																		
right labium.....																		
parotid gland.....																		
leg.....																		
bladder.....																		
ear.....																		
duodenum.....																		
thigh.....																		
throat.....																		
nose.....																		
Cholesteremia.....																		
Hodgkin's disease.....																		
Anæmia.....																		
Leucocythæmia.....																		
Total diathetic diseases.....	6	22	1	7			1	8	18	1	8	16	30	11	27	13	15	
Order 2.— <i>Tubercular</i> .																		
Scrofula.....																		
Pneum abscess.....																		
Rickets.....																		
Tuberculosis.....																		
Marasmus and tabes mesenterica.....																		
Phthisis pulmonalis.....																		
Hydrocephalus.....																		
Tubercular meningitis.....																		
enteritis.....																		
peritonitis.....																		
bronchitis.....																		
Hip disease.....																		
Total tubercular diseases.....	18	34	5	26	5	1	1	88	84	102	124	94	79	110	153	56	48	1
Total constitutional class.....	24	56	6	33	5	1	1	96	102	103	132	110	109	121	180	68	58	1

TABLE 1.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.	Total deaths from each cause.	Per cent. of each cause to total mortality.	DEATH-RATE.				RECAPITULATION.												Total.	Per cent. of each cause to total mortality by age.
			Deaths per 1,000 inhabi- tants.		Total by color and sex.				Total by color.		Total by sex.		Total under 5 years.							
			W.	C.	W.		C.		W.	C.	M.	F.	M.	F.	M.	F.	M.	F.		
					M.	F.	M.	F.												
CLASS III.—LOCAL DISEASES.																				
Order 1.—Nervous system.																				
Meningitis, cerebral.....	25	604	148	113	9	5	2	18	7	14	11	8	4	2	2	16	387			
Cerebritis.....	9	218	658	632	5	2	1	7	2	6	3	2	1	1	1	5	121			
Cerebral effusion.....	15	383	691	685	6	3	4	11	4	6	9	2	3	1	4	9	218			
Softening of brain.....	5	121	625	632	3	2		3	2	3	3	2	2		2	4	697			
Apoplexy.....	15	383	674	667	8	1	3	9	6	11	4	4	2		2	4	697			
Paralysis (general).....	99	2,384	519	582	40	23	19	63	38	59	40	29	1			1	624			
Paraplegia.....	49	1,185	288	226	23	12	6	35	14	29	20	1	1			1	624			
Hemiplegia.....	2	648	608	616	1	1		1	1	1	1	1	1			1	624			
Progressive locomotor ataxia.....	17	411	674	723	4	5	3	9	8	7	10	1	1			1	624			
Insanity (monomania, dementia, mania, melan- cholia).....	6	145	641	616	3	2	1	5	1	4	2	1	1			1	624			
Epilepsy.....	38	919	272	681	26	7	3	33	5	29	9	9	1			1	624			
Sunstroke.....	12	200	658	681	5	2	4	1	1	5	3	1	1			1	624			
Convulsions.....	2	648	682	682	1	1		1	1	1	1	1	1			1	624			
Laryngismus stridulus.....	136	3,238	206	1,786	15	10	59	25	111	74	62	15	10	57	51	138	3,216			
Tetanus (idiopathic).....	1	624	608	608	1	1		1	1	1	1	1	1			1	624			
Trismus nascentium.....	1	624	608	608	1	1		1	1	1	1	1	1			1	624			
Cerebral aneurism.....	31	749	674	356	7	2	10	9	22	17	14	7	2	10	12	31	749			
Congestion of brain.....	2	648	616	356	1	1		2	2	1	1	1	1			1	624			
Sclerosis.....	61	1,475	338	324	22	19	15	5	41	20	37	24	11	10	9	5	846			
Abscess of brain.....	2	648	616	616	2	2		2	2	2	2	2	2			2	624			
Myelitis.....	1	624	608	608	1	1		1	1	1	1	1	1			1	624			
Tumor of brain.....	3	672	625	625	1	2		3	3	1	2	1	1			1	624			
Neurasthenia.....	1	624	608	608	1	1		1	1	1	1	1	1			1	624			
Total diseases of nervous system.....	534	12,911	2,374	3,980	181	107	192	114	288	246	313	221	47	33	63	75	288	5,754		
Order 2.—Circulatory.																				
Carditis.....	1	624	616	616	1	1		1	1	1	1	1	1			1	624			
Pericarditis.....	4	697	616	682	2	2		2	2	2	2	2	2			2	624			
Endocarditis.....	2	648	608	616	1	1		1	1	1	1	1	1			1	624			
Disease of heart (undefined).....	28	677	107	243	6	7	8	7	13	15	14	14	1			1	624			
Hydro-pericardium.....	7	1,169	616	681	1	1		2	2	5	4	3	2			2	624			

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1880.											
	July.			August.			September.			Total first quarter.		
	W.	C.	M.	W.	C.	M.	W.	C.	M.	W.	C.	M.
CLASS III.—LOCAL DISEASES.												
Order 1.—Nervous system.												
Meningitis, cerebral				1			1	1	1	2	1	1
spinalis				2			1			2	1	1
Cerebritis	1	1		1			2	1		3	1	
Cerebral effusion												
Softening of brain	2	1	1	1			2	2	1	2	2	1
Apoplexy	3	1	2	2	1	4	1	1	1	8	4	2
Paralysis (general)	2	1	3	1	3	2	8	3	1	8	3	1
Paraplegia												
Hemiplegia												
Progressive locomotor ataxia												
Insanity (monomania, dementia, mania, melancholia)	3		1	1	1					5	1	1
Epilepsy	1	1		1			1			1	1	1
Sunstroke				4	5	5	2	7	6	5	5	18
Convulsions	3	6	7									
Laryngismus stridulus												
Tetanus (idiopathic)				1	1	2	4	1	6	2	7	4
Trismus nascentium	2	2	3	1	1	1				1	2	1
Cerebral anemia	1	1	2				2	3	4	5	4	2
Congestion of brain				1						1	1	1
Sclerosis												
Abscess of brain												
Myelitis	1									1		
Tumor of brain												
Neurasthenia												
Total diseases of nervous system	18	6	12	13	9	11	9	10	16	14	18	8
Order 2.—Circulatory.												
Carditis										39	31	31
Pericarditis												
Endocarditis												
Disease of heart (undefined)	1	1	1	1	1	1	2	3	2	1	1	1
Hydropicardium	1	1					1	1	1	1	1	1

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1880.												1881.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	Total second quarter.						January.						February.						March.						Total third quarter.						April.						May.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	W.			C.			W.			C.			W.			C.			W.			C.			W.			C.			W.			C.			W.			C.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
CLASS III.—LOCAL DISEASES.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Order 1.—Nervous system.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Meningitis, cerebral	2		1			2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										</

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1881.																	
	June.						Total fourth quarter.						Under 1 year.					
	W.			C.			W.			C.			W.			C.		
	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.
CLASS III.—LOCAL DISEASES.																		
Nervous system.																		
Meningitis, cerebral	1	1					4	6	3	1	2	4	2	2	2			
Meningitis, spinal							3						1	1	1			
Cerebritis							2				1	2	1	1	1			
Cerebral effusion																2		
Softening of brain	1	2	1	1	14	7	4			1								
Apoplexy	2	1	1	1	7	2	3	1										
Paralysis (general)	1																	
Paraplegia							1	1	1									
Hemiplegia							1											
Progressive locomotor ataxia							1	1										
Insanity (monomania, dementia, mania, melancholia)	1						8	2	1	1								
Epilepsy		1											1					
Stroke																		
Convulsions	2	1	4	6	1	13	10	11	9	52	49	3	3	2	1	1		1
Laryngismus stridulus																		
Tetanus (idiopathic)																		
Tetanus nascentium																		
Cerebral anemia	1	4	4				2	7	2	10	12							
Congestion of brain							4	9	6	2	9	5	7	2	1	3	1	2
Sclerosis							1											
Abscess of brain							1											
Myelitis							1	1										
Tumor of brain																1		
Neurasthenia																		
Total diseases of nervous system	8	8	9	7	57	29	36	26	34	24	74	67	7	2	6	5	3	3
Order 2.—Circulatory.																		
Arteritis																		
Pericarditis																		
Endocarditis																		
Disease of heart (undefined)																		
Hydropericardium																		

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.	AGE OF DECEDENT.												SOCIAL RELATIONS.							
	70 to 80 years.						80 to 90 years.						Above 100 yrs.							
	W.		C.		W.		C.		W.		C.		W.		C.		W.		C.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
	M.		F.		M.		F.		M.		F.		M.		F.		M.		F.	
CLASS III.—LOCAL DISEASES.																				
Order 1.— <i>Nervous system.</i>																				
Meningitis, cerebral																				
spinalis																				
Cerebritis																				
Cerebral effusion																				
Softening of brain																				
Apoplexy																				
Paralysis (general)																				
Paraplegia																				
Hemiplegia																				
Progressive locomotor ataxia																				
Insanity (monomania, dementia, mania, melan-																				
cholia)																				
Epilepsy																				
Sunstroke																				
Convulsions																				
Laryngismus stridulus																				
Tetanus (idiopathic)																				
Triasmus nascentium																				
Cerebral anemia																				
Congestion of brain																				
Sclerotic																				
Abscess of brain																				
Myelitis																				
Tumor of brain																				
Neurasthenia																				
Total diseases of nervous system																				
Order 2.— <i>Circulatory.</i>																				
Carditis																				
Pericarditis																				
Endocarditis																				
Disease of heart (undefined)																				
Hydropericardium																				

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	SOCIAL RELATIONS.										NATIVITY.																				
	Widow or widower.					Unknown.					District of Columbia.					Other parts of United States.					Foreign.					Unknown.					
	M.	F.	C.	W.		M.	F.	C.	W.		M.	F.	C.	W.		M.	F.	C.	W.		M.	F.	C.	W.		M.	F.	C.	W.		
CLASS III.—LOCAL DISEASES.																															
Order 1.—Nervous system.																															
Meningitis, cerebral	1										7	6	4	2		2	2	1													
spinalis	1										3	1	1	1		3															
Cerebritis											3	5																			
Cerebral effusion	2	1	3	1												5															
Softening of brain	6	11	4	9	1						6	3	3	1		19	14	15	16	14											
Apoplexy	3	6	2	7							3					14	10	5	7	6											
Paralysis (general)																															
Paraplegia																															
Hemiplegia	2	4									1	1				2	3	4	1												
Progressive locomotor ataxia																1	1	1													
Insanity (monomania, dementia, mania, melan-	3	2									1	1	1	1		11	3	2	1	14											
cholia)	1															2	1	3	1	8											
Epilepsy																															
Sunstroke																															
Convulsions											14	9	57	51		1				1											
Laryngismus stridulus																															
Tetanus (idiopathic)																															
Triannus nascentium											7	2	10	12																	
Cerebral anemia	1																														
Congestion of brain	4	1									11	12	11	5		7	4	4													
Sclerosis																2															
Abscess of brain	1																														
Myelitis																1	1														
Tumor of brain																															
Neurasthenia																															
Total diseases of nervous system.....	19	31	9	26	4						59	47	93	79		72	41	38	35	49	19										
Order 2.—(Circulatory.																															
Carditis																															
Pericarditis																															
Endocarditis																															
Disease of heart (undefined)	2	1	1	3	1						1	2	4			2	4	4	7	3											
Hydropericardium																															

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.	Total deaths from each cause.	Per cent. of total mortality.	DEATH-RATE.	Total by color and sex.						Total by color.			Total under 5 years.			Per cent. of age-specific mortality to total mortality under 5 yrs. of age.
			W.	C.	M.	F.	M.	F.	C.	W.	C.	F.	M.	F.	M.	F.
CLASS III.—LOCAL DISEASES. Order 2.— <i>Ovulatory</i> .—Continued.																
Aneurism of aorta.....	8	.183	.049	.032	5	1	2	.....	.....	6	2	7	1	.....	.....	.....
Aortic.....	1	.024	.016	.016	.....	.....	1	.....	.....	.....	1	1	.....	.....	.....	.....
of coronary iliac.....	1	.024	.016	.016	.....	.....	1	.....	.....	.....	1	1	.....	.....	.....	.....
of isthmus iliac.....	3	.073	.016	.016	2	.....	.....	.....	.....	2	1	2	.....	.....	.....	.....
Dilatation of heart.....	13	.314	.041	.129	4	1	5	3	.....	2	5	8	4	.....	.....	.....
Hypertrophy of heart.....	76	1.837	.338	.566	23	18	17	18	.....	41	35	40	36	1	.....	.024
Fatty degeneration of heart.....	9	.218	.074	.088	4	5	.....	.....	.....	9	4	5	.....	.....	.....	.....
Enlargement of heart.....	8	.193	.065	.065	3	.....	.....	.....	.....	8	5	3	.....	.....	.....	.....
Anemia pectoris.....	5	.121	.033	.033	2	2	.....	.....	.....	4	1	2	.....	.....	.....	.....
Rupture of varicose veins.....	1	.024	.008	.016	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Pelvic hematococlia.....	1	.024	.008	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Total circulatory diseases.....	169	4.086	.783	1.197	53	42	41	33	.....	95	74	94	75	1	1	3
Order 3.— <i>Respiratory</i> .																
Asthma.....	2	.048	.016	.....	1	1	.....	.....	.....	2	.....	1	.....	.....	.....	.....
Laryngitis.....	6	.145	.247	.082	2	2	1	1	.....	4	2	3	.....	.....	.....	.048
Bronchitis.....	101	2.442	.247	1.149	18	12	33	38	.....	30	71	51	50	14	8	2,128
Pleurisy.....	4	.097	.083	.....	1	1	.....	.....	.....	4	.....	3	.....	.....	.....	.....
Hydrothorax.....	1	.024	.008	.....	1	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....
Empyema.....	1	.024	.008	.....	1	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....
Pneumonia.....	328	7.930	1.105	3.139	76	58	98	96	.....	134	194	174	154	27	71	66,186
Congestion of the lungs.....	68	1.644	.290	.550	16	18	16	18	.....	34	34	32	36	5	5	24,580
Hemorrhage of the lungs.....	12	.290	.049	.097	2	4	4	2	.....	6	6	6	.....	.....	.....	.....
Abscess of the lungs.....	2	.048	.016	.....	.....	2	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
Total respiratory diseases.....	525	12.668	1.797	4.968	120	98	153	155	.....	218	307	272	253	47	36	107,278
Order 4.— <i>Digestive</i> .																
Gastritis.....	27	.653	.190	.065	12	11	2	2	.....	23	4	14	13	2	2	1,121
Stomatitis.....	4	.097	.....	.065	.....	3	1	.....	.....	.....	.....	3	.....	.....	.....	.097
Pharyngitis.....	1	.024	.....	.016	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Enteritis.....	25	.604	.132	.146	4	12	3	6	.....	16	9	7	18	3	5	12,290

TABLE I.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.	1890.												1891.											
	Total second quarter.						January.						February.						March.					
	W.			C.			W.			C.			W.			C.			W.			C.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
CLASS III.—LOCAL DISEASES.																								
Order 2.—Circulatory—Continued.																								
Aneurysm of aorta.....	3						1						1						1			1		
innominate.....																								
left common iliac.....																								
internal iliac.....																								
Dilatation of heart.....	1																							
Hypertrophy of heart.....	3	3	6	2	1	1	2	1	1	1	3	2	1	3	2	1	3	2	1	3	2	1	3	2
Valvular diseases of heart.....																								
Fatty degeneration of heart.....																								
Angina pectoris.....	8			1			1				1								1			1		
Embolism.....	1																							
Rupture of varicose veins.....																								
Pelvic hæmatocœlia.....	1																							
Total circulatory diseases.....	11	6	10	8	5	2	3	2	3	2	6	4	2	6	9	8	4	14	17	15	8	4	5	11
Order 3.—Respiratory.																								
Asthma.....																								
Laryngitis.....	1	1																						
Bronchitis.....	2	2	9	9	1	3	3	4	5	1	5	3	2	2	5	4	8	6	13	11	2	1	6	5
Pleurisy.....	1	1																						
Hydrothorax.....																								
Empyema.....	19	10	18	21	11	9	10	13	11	7	12	11	11	13	27	11	33	29	49	34	13	6	14	13
Pneumonia.....	5	6	8	5	1	3	1	1	1	5	3	3	2	2	3	4	8	4	8	6	7	1	3	4
Congestion of the lungs.....																								
Hæmorrhage of the lungs.....																								
Abscess of the lungs.....																								
Total respiratory diseases.....	28	20	39	35	13	15	14	16	17	15	20	17	16	15	34	18	46	45	68	53	16	10	21	18
Order 4.—Digestive.																								
Gastritis.....																								
Stomatitis.....	2	4					1										1	1			3	2	2	1
Pharyngitis.....																								
Enteritis.....	2			2			1	1				1	1		4			4	2	2		1		1

1881.																											
Cause of death.		JUNE.												AGE OF DECEDENT.													
		Total fourth quarter.				Under 1 year.				1 to 2 years.				2 to 3 years.				3 to 4 years.				4 to 5 years.					
		W.	C.	M.	F.	W.	C.	M.	F.	W.	C.	M.	F.	W.	C.	M.	F.	W.	C.	M.	F.	W.	C.	M.	F.	W.	C.
CLASS III.—LOCAL DISEASES.																											
Order 2.—Circulatory—Continued.																											
Aneurism of aorta.....																											
innominate.....																											
left common iliac.....																											
internal iliac.....																											
Dilatation of heart.....																											
Hypertrophy of heart.....																											
Valvular diseases of heart.....																											
Fatty degeneration of heart.....																											
Angina pectoris.....																											
Embolism.....																											
Rupture of varicose veins.....																											
Pelvic hæmatocele.....																											
Total circulatory diseases.....																											
Order 3.—Respiratory.																											
Asthma.....																											
Laryngitis.....																											
Bronchitis.....																											
Pleurisy.....																											
Hydrothorax.....																											
Empyema.....																											
Pneumonia.....																											
Congestion of the lungs.....																											
Hemorrhage of the lungs.....																											
Abscess of the lungs.....																											
Total respiratory diseases.....																											
Order 4.—Digestive.																											
Gastritis.....																											
Stomatitis.....																											
Pharyngitis.....																											
Enteritis.....																											

TABLE I.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	AGE OF DECEASED.											
	5 to 10 years.			10 to 20 years.			20 to 30 years.			30 to 40 years.		
	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.
CLASS III.—LOCAL DISEASES.												
Order 2.— <i>Circulatory</i> —Continued.												
Aneurism of aorta.....												
Innominate.....												
Left common iliac.....												
Internal iliac.....												
Dilatation of heart.....												
Hypertrophy of heart.....												
Valvular diseases of heart.....												
Fatty degeneration of heart.....												
Angina pectoris.....												
Embolism.....												
Rupture of varicose veins.....												
Pelvic hæmatocele.....												
Total circulatory diseases.....	1	1		6	2		5	2	1	4	7	2
Order 3.— <i>Respiratory</i> .												
Asthma.....												
Laryngitis.....	2	1										
Bronchitis.....				1								
Pleurisy.....												
Hydrothorax.....												
Empyema.....												
Pneumonia.....	2	2	1	3	3	4	1	5	1	2	7	4
Congestion of the lungs.....	2	1	1	1	1	1	1	3	2	1	1	1
Hæmorrhage of the lungs.....				1	1	1	1	1	1	1	1	1
A hæmorrhage of the lungs.....												
Total respiratory diseases.....	2	6	2	4	4	7	2	1	6	3	4	10
Order 4.— <i>Digestive</i> .												
Gastritis.....												
Stomatitis.....												
Pharyngitis.....												
Enteritis.....	1	1		1						1	1	

TABLE I.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	AGE OF DECEDENT.												SOCIAL RELATIONS.					
	70 to 80 years.						80 to 90 years.						Above 100 yrs.					
	W.			C.			W.			C.			W.			C.		
	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.
CLASS III.—LOCAL DISEASES.																		
Order 2.—Circulatory—Continued.																		
Aneurism of aorta.....																		
innominate.....																		
left common iliac.....																		
internal iliac.....																		
Dilatation of heart.....																		
Hypertrophy of heart.....																		
Valvular diseases of heart.....																		
Fatty degeneration of heart.....																		
Angina pectoris.....																		
Embolism.....																		
Rupture of varicose veins.....																		
Pelvic hematocoele.....																		
Total circulatory diseases.....	7	10	3	6	3	1	1	1	1				28	14	26	18	6	6
Order 3.—Respiratory.																		
Asthma.....																		
Laryngitis.....																		
Bronchitis.....																		
Pleurisy.....																		
Hydrothorax.....																		
Empyema.....																		
Pneumonia.....	5	5	2	2			2	5	3				27	16	14	13	4	5
Congestion of the lungs.....	2	2	2				2						9	4	6	4	1	3
Hemorrhage of the lungs.....													2	2	3	1	1	
Abscess of the lungs.....																		
Total respiratory diseases.....	8	9	4	2	1	2	5	5					46	24	24	20	16	9
Order 4.—Digestive.																		
Gastritis.....																		
Hematemesis.....	5	5																
Enteritis.....																		
Laryngitis.....																		
Enteritis.....																		

TABLE I.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	Total deaths from each cause.	Per cent of each cause to total mortality.	DEATH-RATE.						RECAPITULATION.											
			Deaths per 1,000 inhabitants.						Total by color and sex.						Total by sex.					
			W.		C.		Total.		W.		C.		Total.		W.		C.		Total.	
			W.	C.	W.	C.	M.	F.	M.	F.	W.	C.	M.	F.	M.	F.	W.	C.	M.	F.
CLASS III.—LOCAL DISEASES.																				
Order 4.—Digestive—Continued.																				
Gastro-enteritis.....	14	.338	.091	.048	7	4	.....	3	11	3	7	7	2	7	.109				
Peritonitis.....	14	.338	.058	.113	3	4	5	2	7	7	8	6	1	1	.024					
Colonitis.....	1	.024	.008	.....	1	.....	.....	4	1	6	2	4	.....	1	.024	
Ascites.....	6	.145	.097	.....	.....	2	.....	.....	.....	.....	1	.....	.....	1	.024
Icterus.....	1	.024	.008	.....	1	.....	.....	.....	1	1	1	2	.....	1	.024
Congestion of intestines.....	2	.048	.008	.016	1	2	1	1	3	2	2	3	.....	1	.024				
Obstruction of intestines.....	5	.121	.025	.032	1	1	1	1	2	1	2	1	.....	1	.024				
Hemorrhage of intestines.....	3	.073	.016	.016	1	1	1	.....	1	1	2	1	.....	1	.024			
Hernia, scrotal.....	2	.048	.008	.016	1	2	.....	.....	3	1	2	2	.....	1	.024		
Inginal.....	3	.073	.025	.016	1	1	1	.....	2	2	1	1	.....	1	.024			
Strangulated.....	2	.048	.016	.016	1	1	1	.....	1	1	2	1	.....	1	.024			
Ileus.....	2	.048	.008	.016	1	1	1	.....	1	1	1	1	.....	1	.024			
Colic.....	1	.024	.008	.016	.....	.....	1	.....	1	1	1	1	.....	1	.024	
Gastric catarrh.....	1	.024	.008	.024	2	2	2	2	4	4	4	4	2	4	.097					
Intussusception.....	8	.193	.033	.065	2	2	2	2	4	4	4	4	2	4	.048					
Ulceration of stomach.....	2	.048	.032	.032	1	1	1	1	2	2	1	1	1	1	.024					
Hepatitis.....	15	.363	.091	.065	4	7	2	2	11	4	6	9	1	2	.048					
Hypertrophy of the liver.....	2	.048	.008	.016	1	1	1	.....	1	1	2	2	.....	1	.024			
Abscess of the liver.....	4	.097	.033	.016	3	1	.....	.....	4	3	3	1	.....	1	.024		
Disease of the liver (undefined).....	1	.024	.016	.....	1	1	1	.....	1	1	1	1	.....	1	.024		
Jaundice.....	2	.048	.016	.024	2	2	.....	.....	2	2	2	2	.....	1	.024		
Cirrhosis of the liver.....	14	.338	.099	.032	11	1	2	2	12	2	13	1	.....	4	.097				
Dyspepsia.....	5	.121	.025	.032	3	.....	.....	2	3	2	5	.....	2	13	.870		
Dentition.....	36	.870	.107	.372	7	6	10	13	13	23	17	19	7	6	.870					
Fistula.....	1	.024	.016	.016	.....	.....	1	.....	1	1	1	1	.....	1	.024	
Stricture of esophagus.....	1	.024	.008	.....	1	.....	.....	.....	1	1	1	1	.....	1	.024
Gall stones.....	2	.048	.016	.016	1	2	.....	.....	2	2	2	2	.....	1	.024		
Typhlitis.....	3	.073	.016	.016	1	1	1	.....	2	1	2	1	.....	1	.024			
Neuralgia of intestines.....	1	.024	.008	.....	.....	1	.....	.....	1	1	1	1	.....	1	.024
Total digestive diseases.....	211	5.101	1.063	1.327	69	60	44	38	129	62	113	98	19	24	1.984					

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

1880.

Cause of death.	July.			August.			September.			Total first quarter.			October.			November.			December.		
	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.
CLASS III.—LOCAL DISEASES.																					
Order 4.—Digestive—Continued.																					
Gastro-enteritis	1	1		1				1		2	2	1	2	1		1	1	1		1	
Peritonitis	1	1						1	1	1											
Colic																					
Colitis																					
Acetia																					
Icterus																					
Congestion of intestines								1	1	1	1	1									
Obstruction of intestines																					
Hemorrhage of intestines																					
Hernia, scrotal								1		1											
Hernia, inguinal								1		1											
Hernia, strangulated																					
Ileus																					
Colic																					
Gastric catarrh																					
Intussusception																					
Ulceration of stomach																					
Hepatitis	1			2	1	1	2	1	1	3	3	1	1	3							
Hypertrophy of the liver																					
Abscess of the liver	1																				
Diseases of the liver (undefined)																					
Jaundice																					
Cirrhosis of the liver																					
Dyspepsia	1	2	3																		
Dentition																					
Fistula																					
Stricture of esophagus																					
Gall stones																					
Typhilitis																					
Neuritis of intestines																					
Total digestive diseases	7	7	5	4	4	7	6	8	9	4	7	2	20	18	14	6	6	3	2	3	5

TABLE I.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.	1890.												1891.											
	Total second quarter.						January.						February.						March.					
	W.			C.			W.			C.			W.			C.			W.			C.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
CLASS III.—LOCAL DISEASES.																								
Order 4.—Digestive—Continued.																								
Gastro-enteritis.....	3	1	1	1	1	1																		
Peritonitis.....	2												1											
Coloitis.....													1											
Acidities.....				2									1											
Icterus.....																								
Congestion of intestines.....							1						1	1										
Obstruction of intestines.....													1											
Hemorrhage of intestines.....																								
Hernia, scrotal.....																								
Hernia, inguinal.....	1						1						1											
Hernia, strangulated.....																								
Ileus.....																								
Colic.....																								
Gastric catarrh.....																								
Intussusception.....																								
Ulceration of stomach.....				2																				
Hepatitis.....				3																				
Hypertrophy of the liver.....																								
Abscess of the liver.....	1						1																	
Diseases of the liver (undefined).....																								
Jaundice.....																								
Cirrhosis of the liver.....	2						1						2											
Dyspepsia.....	1						1						1											
Dentition.....	1	2	1	3	1	1							2	1										
Flatula.....																								
Stricture of œsophagus.....																								
Gall stones.....																								
Typhilitis.....				1	1																			
Neuralgia of intestines.....				1																				
Total digestive diseases.....	14	13	3	10	6	5	2	2	6	2	6	1	5	5	3	6	17	12	11	8	7	8	7	1
																								3

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.	AGE OF DECEASED.															
	5 to 10 years.		10 to 20 years.		20 to 30 years.		30 to 40 years.		40 to 50 years.		50 to 60 years.		60 to 70 years.			
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.
CLASS III.—LOCAL DISEASES.																
Order 4.—Digestive—Continued.																
Gastro enteritis																
Peritonitis	1				1		1				1		1		2	
Colicitis																
Ascaris																
Acerus																
Congestion of intestines																
Obstruction of intestines																
Hemorrhage of intestines																
Hernia, scrofula																
Inguinal																
strangulated																
Hous																
Colic																
Gastric catarrh																
Intussusception																
Ulceration of stomach																
Hepatitis																
Hypertrophy of the liver																
Disease of the liver																
Jaundice of the liver (undefined)																
Cirrhosis of the liver																
Dyspepsia																
Dysphagia																
Fistula																
Stricture of esophagus																
Gall stones																
Typhilitis																
Neuritis of intestines																
Total digestive diseases	1	2	1	1	1	1	2	1	3	4	6	2	1	8	9	5
															4	9
															7	3
															2	2

TABLE I.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	SOCIAL RELATIONS.										NATIVITY.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	Widow or widower.					Unknown.					District of Columbia.					Other parts of United States.					Foreign.					Unknown.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	W.		C.		M. F.	W.		C.		M. F.	W.		C.		M. F.	W.		C.		M. F.	W.		C.		M. F.	W.		C.		M. F.	W.		C.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.	M.	F.	M.	F.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
CLASS III.—LOCAL DISEASES.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Order 4.—Digestive—Continued.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Gastro-enteritis.....	2										3	2	2			2	2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

TABLE 1.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.	Total deaths from each cause.	DEATH-RATE.		Total by color and sex.						Total by color.				Total under 5 years.				Per cent. of total mortality.	Per cent. of total mortality under each cause.
		Deaths per 1,000 inhabitants.		W.		C.		W.		C.		W.		C.					
		W.	C.	M.	F.	M.	F.	W.	C.	M.	F.	W.	C.	M.	F.				
Class III.—LOCAL DISEASES.																			
Order 5.— <i>Urinary system.</i>																			
Nephritis.....	10	.242	.113	1	2	3	4	6	7	4	6	1	1	1	3	.072			
Nephria (Bright's disease).....	37	.886	.181	12	10	9	6	22	15	21	16	1	1	1	1	.024			
Congestion of the kidneys.....	1	.024	.016	4	3	2	1	7	2	6	3	1	1	1	1	.024			
Uremia.....	9	.218	.058	3	1	4	2	4	4	3	1	2	2	2	2				
Diabetes.....	4	.007	.033	2	1	1	1	2	2	2	2	2	2	2	2				
Calculus.....	2	.048	.016	9	1	1	1	10	1	10	1	1	1	1	1				
Cystitis.....	11	.266	.082	2	2	3	2	2	3	3	3	2	2	2	2				
Albuminuria.....	3	.072	.049	2	2	2	2	2	2	2	2	2	2	2	2				
Hypertrophy of the prostate.....	2	.048	.016	2	2	2	2	2	2	2	2	2	2	2	2				
Kidney disease (undefined).....	2	.048	.016	2	2	2	2	2	2	2	2	2	2	2	2				
Total diseases of the urinary system.....	81	1.958	.412	83	17	18	13	50	31	51	80	1	3	1	5	.121			
Order 6.— <i>Generative organs.</i>																			
Ovarian tumor.....	4	.007	.016	2	2	2	2	2	2	4	4								
Metropertionitis.....	2	.048	.016	1	1	1	1	1	1	2	2								
Menorrhagia.....	1	.024	.008	1	1	1	1	1	1	1	1								
Uterine tumor.....	3	.072	.008	1	1	2	2	1	2	3	3								
Total diseases of the generative organs.....	10	.242	.041	5	5	5	5	5	5	10	10								
Order 7.— <i>Ossæous and locomotory.</i>																			
Caries of femur and knee joint.....	1	.024	.016			1	1		1	1	2	1	1	1	1	.024			
Caries vertebrae.....	2	.048	.032			2	2		2	2	2								
Orbital abscess.....	1	.024	.016			1	1		1	1	1								
Mollities ossium.....	1	.024	.016			1	1		1	1	1								
Caries of dorsal vertebrae.....	1	.024	.008	1	1	1	1	1	1	1	1	1	1	1	1	.024			
Rheumatic arthritis.....	1	.024	.008	1	1	1	1	1	1	1	1								
Pelvic abscess.....	1	.024	.016			1	1		1	1	1								
Total ossæous and locomotory diseases.....	8	.182	.016	2	2	1	5	2	6	3	5	1			2	3	.072		

TABLE I.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

1880.

Cause of death.	July.		August.		September.		Total first quarter.				October.		November.		December.	
	W. C.		W. C.		W. C.		W.	C.	W.	C.	W.	C.	W.	C.	W.	C.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
CLASS III.—LOCAL DISEASES.																
Order 5.— <i>Urinary System.</i>																
Nephritis																
Nephria (Bright's disease)	1	1			2	1	2	2	1	1			1		1	
Congestion of the kidneys										2	5	3	1		2	1
Uremia	1		1		1					1	1	1		1		
Diabetes																
Calculus																
Cystitis	1									1						
Albuminuria		2			1					1		3		1		
Hypertrophy of the prostate																
Kidney disease (undefined)																
Total diseases of the urinary system	1	1	3	2			4	1	2	2	1	3	3	9	4	3
															1	2
															2	1
															4	2
															1	1
Order 6.— <i>Generative Organs.</i>																
Ovarian tumor																
Metroporitonitis																
Menorrhagia					1											
Uterine tumor					1										1	

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1880.												1881.											
	Total second quarter.						January.						February.						March.					
	W.			C.			W.			C.			W.			C.			W.			C.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
CLASS III.—LOCAL DISEASES.																								
Order 5.— <i>Urinary system.</i>																								
Nephritis.....	1	2	3	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Nephria (Bright's disease).....	4	1	5	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Congestion of the kidneys.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Uremia.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Diabetes.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Calculus.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Cystitis.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Albuminuria.....	3	1	4	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Hypertrophy of the prostate.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Kidney disease (undefined).....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Total diseases of the urinary system.....	9	4	13	4	4	8	7	7	14	11	22	11	12	24	36	11	12	23	4	4	8	11	11	22
Order 6.— <i>Generative organs.</i>																								
Ovarian tumor.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Metroperitonitis.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Menorrhagia.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Uterine tumor.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Total diseases of the generative organs.....	4	4	8	4	4	8	4	4	8	11	22	4	4	8	11	4	4	8	4	4	8	4	4	8
Order 7.— <i>Ossous and locomotory.</i>																								
Caries of femur and knee joint.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Caries vertebrae.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Orbital abscess.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Mollities osium.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Caries of dorsal vertebrae.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Rheumatic arthritis.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Pelvic abscess.....	1	1	2	1	1	2	1	1	2	3	6	1	1	2	3	1	1	2	1	1	2	1	1	2
Total ossous and locomotory diseases.....	2	2	4	2	2	4	2	2	4	5	10	2	2	4	5	2	2	4	2	2	4	2	2	4

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1881.												AGE OF DECEASENT.											
	June.						Total fourth quarter.						Under 1 year.						1 to 2 years.					
	W.			C.			W.			C.			W.			C.			W.			C.		
	M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.	
CLASS III.—LOCAL DISEASES.																								
Order 5.— <i>Urinary system.</i>																								
Nephritis.....																								
Nephritis (Bright's disease).....																								
Concretion of the kidneys.....	1	2																						
Uremia.....																								
Diabetes.....																								
Diabetes.....																								
Calculus.....																								
Cystitis.....																								
Albuminuria.....																								
Hypertrophy of the prostate.....																								
Kidney disease (undefined).....	1																							
Total diseases of the urinary system.....	2	1	3	3	9	5	7	4					1						1	1				
Order 6.— <i>Generative organs.</i>																								
Ovarian tumor.....																								
Metropertitonitis.....																								
Menorrhagia.....																								
Uterine tumor.....																								
Total diseases of the generative organs.....																								
Order 7.— <i>Osteous and locomotory.</i>																								
Caries of femur and knee joint.....																								
Caries of femur.....	1																							
Orbital abscess.....																								
Mollities ossium.....																								
Caries of dorsal vertebrae.....																								
Rheumatic arthritis.....																								
Pelvic abscess.....																								
Total osteous and locomotory diseases.....																								

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	AGE OF DECEDENT.																							
	5 to 10 years.			10 to 20 years.			20 to 30 years.			30 to 40 years.			40 to 50 years.			50 to 60 years.			60 to 70 years.					
	W.		C.	W.		C.	W.		C.	W.		C.	W.		C.	W.		C.	W.		C.	W.		C.
	M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.	
CLASS III.—LOCAL DISEASES.																								
Order 5.— <i>Urinary system.</i>																								
Nephritis.....																								
Nephritis (Bright's disease).....	1	1								1	1													
Congestion of the kidneys.....										3	2	1	3	1	1							2	1	1
Uremia.....	1						1									1						1	1	
Diabetes.....																								
Calculus.....																								
Cystitis.....																								
Albuminuria.....										1														
Hypertrophy of the prostate.....																								
Kidney disease (undefined).....	1																							
Total diseases of the urinary system.....	2	1	1	1			2	1	1	2	1	2	4	5	1	3			9	2	3	1	11	3
Order 6.— <i>Generative organs.</i>																								
Ovarian tumor.....																								
Metropéritonitis.....										1														
Menorrhagia.....																								
Uterine tumor.....										1														
Total diseases of the generative organs.....										1														
Order 7.— <i>Osses and locomotory.</i>																								
Caries of femur and knee joint.....																								
Caries vertebrae.....																								
Orbital abscess.....	1																							
Mollities ossium.....																								
Caries of dorsal vertebrae.....																								
Rheumatic arthritis.....																								
Pelvic abscess.....																								
Total osseous and locomotory diseases.....																								

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	AGE OF DECEASED.												SOCIAL RELATIONS.					
	70 to 80 years.						80 to 90 years.						Above 100 yrs.					
	W.			C.			W.			C.			W.			C.		
	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.
Class III.—LOCAL DISEASES.																		
Order 5.—Urinary system.																		
Nephritis.....	1	1											1	1		2		2
Nephria (Bright's disease).....	2	1	2										8	8	5	1	2	1
Congestion of the kidneys.....																		
Uremia.....	1												4	1	1			
Diabetes.....													3					
Calculus.....	1												2					
Cystitis.....	2	1											3			5	1	
Albuminuria.....													2					2
Hypertrophy of the prostate.....																1		
Kidney disease (undefined).....																		
Total diseases of the urinary system.....	4	3	3	2									23	5	9	3	6	3
Order 6.—Generative organs.																		
Ovarian tumor.....																		
Metropertontitis.....	1													2		1		1
Menorrhagia.....														1				1
Uterine tumor.....																1	1	
Total diseases of the generative organs.....	1													3		2	1	2
Order 7.—Osseous and locomotory.																		
Caries of femur and knee-joint.....																1		
Caries vertebrae.....																		
Orbital abscess.....																		
Mollities osium.....																		
Caries of dorsal vertebrae.....																	1	
Rheumatic arthritis.....																		
Pelvic abscess.....																		
Total osseous and locomotory diseases.....																1	1	1

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	SOCIAL RELATIONS.						NATIVITY.																	
	Widow or widower.			Unknown.			District of Columbia.				Other parts of United States.				Foreign.				Unknown.					
	W.		C.	W.		C.	W.		F.	M.	F.	G.	W.		M.	F.	M.	F.	M.	F.	M.	F.	G.	
	M.	F.		M.	F.		M.	F.					M.	F.										
CLASS III.—LOCAL DISEASES.																								
Order 5.— <i>Urinary system.</i>																								
Nephritis.....	2	4	1	3				2	5	3	2	1	1				8	3						
Nephritis (Bright's disease).....													9	5	6	4	1							
Congestion of the kidneys.....	1							1		1			2	2	1		1							
Uremia.....	1							2	1				1				1							
Diabetes.....													1				1							
Calculus.....	1							1	1				2				1							
Cystitis.....													1				3							
Albuminuria.....								1					1											
Hypertrophy of the prostate.....																								
Kidney disease (undefined).....											1						1							
Total diseases of the urinary system.....	3	6	2	3				7	9	4	4	16	7	14	9	10	1							
Order 6.— <i>Generative organs.</i>																								
Ovarian tumor.....											1						1							
Metropéritonitis.....													1				1							
Menorrhagia.....	1												1				1							
Uterine tumor.....																	2							
Total diseases of the generative organs.....	1			1							1			4			4	1						
Order 7.— <i>Ossous and locomotory.</i>																								
Caries of femur and knee-joint.....																	1							
Caries vertebrae.....											2													
Orbital abscess.....																	1							
Mollities ossium.....											1													
Caries of dorsal vertebrae.....																								
Rheumatic arthritis.....																				1				
Pelvic abscess.....											1													
Total ossous and locomotory diseases.....								1			4							1	1	1				

TABLE I.—DEATHS.—SHOWING: TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

[illegible]

TABLE 1.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	SOCIAL RELATIONS.						NATIVITY.					
	Widow or widower.			Unknown.			District of Columbia.			Other parts of United States.		
	W.		C.	W.		C.	W.		C.	W.		C.
	M.	F.	M. F.	M.	F.	M. F.	M.	F.	M. F.	M.	F.	M. F.
CLASS III.—LOCAL DISEASES.												
Order 5.— <i>Urinary system.</i>												
Nephritis.....												
Nephritis (Bright's disease).....	2	4	1	3								
Congestion of the kidneys.....					2	5	2	3	2	9	5	6
Uremia.....	1				1		1			2	2	1
Diabetes.....	1				2	1				1	1	
Calculus.....										1		
Cystitis.....	1		1		1	1				2		
Albuminuria.....										1	6	
Hypertrophy of the prostate.....					1					1		
Kidney disease (undefined).....								1				
Total diseases of the urinary system.....	3	6	2	3			7	9	4	16	7	14
Order 6.— <i>Generative organs.</i>												
Ovarian tumor.....									1		1	
Metropéritonitis.....											1	
Menorrhagia.....	1										1	
Uterine tumor.....			1									
Total diseases of the generative organs.....	1		1								4	1
Order 7.— <i>Ossous and locomotory.</i>												
Caries of femur and knee-joint.....												
Caries vertebrae.....											1	
Orbital abscess.....									2			
Mollities ossium.....												
Caries of dorsal vertebrae.....					1							
Rheumatic arthritis.....												1
Pelvic abscess.....												
Total ossous and locomotory disease.....						1					1	1

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	DEATH-RATE.										RECAPITULATION.										Per cent. of each cause to total mortality by year of age.	
	Total deaths from each cause.					Deaths per 1,000 inhabitants.					Total by color.					Total by sex.						
	Total by cause.					Total by color and sex.					Total by color.					Total under 5 years.						
	W.	C.	M.	F.	T.	W.	C.	M.	F.	T.	W.	C.	M.	F.	T.	W.	C.	M.	F.	T.		
CLASS III.—LOCAL DISEASES.																						
Order 8.— <i>Integumentary.</i>																						
Cellulitis.....	1	.024	.008	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ulcer of leg.....	2	.048	.008	.016	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bulles.....	1	.024	.008	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Abscess of thigh.....	1	.024	.008	.016	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....neck.....	1	.024	.008	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....leg.....	1	.024	.008	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Alsecess.....	1	.024	.008	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peritonal abscess.....	1	.024	.008	.016	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lumbar abscess.....	3	.073	.016	.016	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total integumentary diseases.....	12	.290	.066	.065	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total local diseases.....	1,550	37.476	6,554	12,217	461	334	392	363	763	765	833	697	117	90	219	209	635	15	353	.....	.....
CLASS IV.—DEVELOPMENTAL DISEASES.																						
Order 1.— <i>Children.</i>																						
Premature birth.....	71	1.717	.330	.502	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Preternatural birth.....	4	.097	.033	.048	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cyanosis.....	13	.363	.099	.048	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Umbilical hemorrhage.....	3	.072	.048	.048	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ateloid pneumonia.....	6	.145	.049	.016	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spina bifida.....	5	.121	.053	.016	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Congenital debility.....	94	2.273	.288	.955	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Henophyllia.....	1	.024	.008	.016	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Icterus neonatorum.....	1	.024	.008	.016	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total diseases of children.....	200	4.836	.949	1.570	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Order 2.— <i>Women.</i>																						
Puerperal thrombosis.....	1	.024	.008	.016	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Perturition.....	6	.145	.016	.097	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Puerperal convulsions.....	8	.193	.016	.097	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1880.												1881.											
	Total second quarter.						January.						February.						March.					
	W.			C.			W.			C.			W.			C.			W.			C.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
CLASS III.—LOCAL DISEASES.																								
Order 8.— <i>Integumentary.</i>																								
Cellulitis	1																							
Ulcer of leg																								
Bullæ																								
Abscess of thigh																								
neck																								
leg																								
Abscess																								
Perineal abscess																								
Lumbar abscess																								
Total	1																							
Total integumentary diseases	1						1			1			1			1			1			1		
Total local diseases	102	67	75	89	46	33	27	34	47	33	38	32	41	40	58	36	134	106	123	102	51	38	46	40
CLASS IV.—DEVELOPMENTAL DISEASES.																								
Order 1.— <i>Children.</i>																								
Premature birth	10	1	7	2			1		2	3		1		5	1		3	6	1	3	1	1		1
Preternatural birth																								
Cyanosis	3	2					1				1			1		1		2		2		1	2	1
Umbilical hemorrhage																								
Asteletois pulmonum	1						1			2							3	1						
Spina bifida	1																							
Congenital debility	6	7	5	7	2	1	4	3		1		1	6	2	2	4	4	3	7	13	2	1	5	1
Hemophilia																								
Icterus neonatorum																								
Total diseases of children	21	11	13	10	3	4	4	5	6	2	1	7	2	9	3	5	11	15	8	19	4	2	7	2
Order 2.— <i>Women.</i>																								
Puerperal thrombosis																								
Parturition																								
Puerperal convulsions																								

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.	1891.											
	June.			Total fourth quarter.			Under 1 year.			1 to 2 years.		
	W.	C.	F.	W.	C.	F.	W.	C.	F.	W.	C.	F.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
CLASS III.—LOCAL DISEASES.												
Order 8.— <i>Integumentary.</i>												
Cellulitis												
Ulcer of leg				1								
Bullae										1		
Abscess of thigh							1					
neck										1		
leg				1								
Abscess							1					
Perineal abscess												
Lumbar abscess												
Total integumentary diseases				2			1			2		
Total local diseases	25	18	20	23	132	83	96	80	78	56	140	151
CLASS IV.—DEVELOPMENTAL DISEASES.												
Order 1.— <i>Children.</i>												
Premature birth	3	1	3		4	2	4	1	25	15	18	13
Pretermatural birth	1					1			1	3		
Cyanosis					2	1	2		5	7	3	
Umbilical hemorrhage												
Atelectasis pulmonum	1				1				4	2		
Spina bifida									2	2		
Congenital debility	3	1	3	2	8	1	9	4	21	14	27	32
Hemophilia									1			
Icterus neonatorum									1			
Total diseases of children	7	3	6	2	15	6	15	5	58	45	48	1
Order 2.— <i>Women.</i>												
Puerperal thrombosis	1				1							
Parturition									1			
Puerperal convulsions					1							

TABLE I.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

CAUSE OF DEATH.	AGE OF DECEDENT.											
	5 to 10 years.			10 to 20 years.			20 to 30 years.			30 to 40 years.		
	W.	C.	M.	W.	C.	M.	W.	C.	M.	W.	C.	M.
CLASS III.—LOCAL DISEASES.												
Order 8.—Integumentary.												
Cellulitis.....												
Ulcer of leg.....												
Bullae.....												
Abscess of thigh.....												
neck.....												
leg.....												
Abscess.....												
Perineal abscess.....												
Lumbar abscess.....												
Total integumentary diseases.....												
Total local diseases.....												
CLASS IV.—DEVELOPMENTAL DISEASES.												
Order 1.—Children.												
Premature birth.....												
Preternatural birth.....												
Cyanosis.....												
Umbilical hemorrhage.....												
Atelectasis, pulmonum.....												
Spina bifida.....												
Congenital debility.....												
Hemophilia.....												
Loterus neonatorum.....												
Total diseases of children.....												
Order 2.—Women.												
Puerperal thrombosis.....												
Parturition.....												
Puerperal convulsions.....												

TABLE I.—IDRATH.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH RATES FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	AGE OF DECEASED.												SOCIAL RELATIONS.					
	70 to 80 years.						80 to 90 years.						90 to 100 years.					
	W.			C.			W.			C.			W.			Above 100 yrs.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
CLASS III.—LOCAL DISEASES.																		
Order 8.— <i>Integumentary.</i>																		
Cellulitis.....																		
Ulcer of leg.....																		
Bullae.....																		
Abscess of thigh.....																		
neck.....																		
leg.....																		
Abscess.....																		
Perineal abscess.....																		
Lumbar abscess.....																		
Total integumentary diseases.....																		
Total local diseases.....																		
49 45 22 24 9 10 9 9 2 3 3 3 200 96 101 61 79 25 27 24																		
CLASS IV.—DEVELOPMENTAL DISEASES.																		
Order 1.— <i>Children.</i>																		
Premature birth.....																		
Preterm birth.....																		
Cyanosis.....																		
Unilateral hemorrhage.....																		
Abscess.....																		
Abscess, pulmonary.....																		
Spina bifida.....																		
Congenital debility.....																		
Henophila.....																		
Leucis neonatorum.....																		
Total diseases of children.....																		
Order 2.— <i>Women.</i>																		
Puerperal thrombosis.....																		
Parturition.....																		
Puerperal convulsions.....																		

TABLE 1.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.	Total deaths from each cause.	Per cent. of total mortality.	DEATH-RATE.			RECAPITULATION.													
			Deaths per 1,000 inhab- itants.			Total by color and sex.						Total by color.			Total under 5 years.			Total.	Per cent. of each cause to total mor- tality under 5 yrs. of age.
			W.	C.	Total	Total by color and sex.			Total by color.			Total under 5 years.							
						W.	M.	F.	W.	C.	Total	W.	M.	F.	C.				
CLASS IV.—DEVELOPMENTAL DISEASES.																			
Order 2.—Women.																			
Puerperal fever.....	10	.242	.058	.048		7						3	7	3					
septicæmia.....	7	.166	.033	.048		4						2	4	3					
metrorrhœia.....	2	.048	.032									2							
metritis.....	2	.024	.008			1							1						
hemorrhage.....	2	.048	.032									2							
peritonitis.....	2	.048	.032									2							
Placenta prævia.....	1	.024	.008			1							1						
Miscarriage.....	1	.024	.008			1							1						
Phlegmasia dolens.....	1	.024	.008			1							1						
Pregnancy.....	2	.048	.016			2							2						
Post partum hemorrhage.....	1	.024	.016									1							
Total diseases of women.....	45	1.088	.181	.372		22						23	22	23					
Order 3.—Old age.																			
Senile debility.....	191	4.018	.886	1.391		36	69	36				50	105	86					
(Paralysis.....	6	.145	.033	.032		1	3					2	4	2					
Total diseases of old age.....	197	4.763	.899	1.424		37	72	36				52	109	88					
Order 4.—Nutrition.																			
Debility or asthenia.....	11	.266	.074	.032		4	5					2	9	2					
Total nutrition diseases.....	11	.266	.074	.032		4	5					2	9	2					
Total developmental diseases.....	453	10.953	2.003	3.398		99	144	85				125	243	210					
CLASS V.—VIOLENCE.																			
Order 1.—Accidents and negligence.																			
Injury from falls.....	21	.508	.148	.049		10	8	3					18	3	12		8		
Gunshot wound.....	6	.145	.049			5	1						6		5		1		
Railroad accident.....	3	.073	.025			3							3		3				
Fall of lumber.....	1	.024	.008			1							1		1				
Drowned.....	11	.266	.085			5	2	4					7	4	9		2		
Scald.....	4	.097	.016	.022		1	1	1				1	2	2		2			
Neglect at birth.....	3	.073	.049											3	1	2			
Street-car accident.....	1	.024	.008			1							1		1		2		

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1880.																							
	July.			August.			September.			Total first quarter.			October.			November.			December.					
	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.
CLASS IV.—DEVELOPMENTAL DISEASES. Order 2.— <i>Women.</i>																								
Puerperal fever.....	2		1				1		1	3		2			1	1					1			
septicæmia.....	1									1		1				1								
metre-peritonitis.....						1												1						
metritis.....									1							1								
hemorrhage.....												1										1		1
peritonitis.....																1						1		1
Placenta prævia.....																								
Miscarriage.....																								
Phlegmasia dolens.....						1				1														
Pregnancy.....																								
Post partum hemorrhage.....																								
Total diseases of women.....	3		2	1	2	1	1	3	5	7		2			4	2					2			2
Order 3.— <i>Old Age.</i>																								
Senile debility.....	3	5	5	1	1	2	3	4	8	4	8	15	7	8	2	10	3	7	1	2	2	7	7	3
Gangrene.....																								
Total diseases of old age.....	3	5	5	1	2	2	3	4	8	4	8	15	7	9	2	10	3	7	2	2	2	7	7	2
Order 4.— <i>Nutrition.</i>																								
Debility or æsthenia.....										1			1						1			1	2	
Total nutrition diseases.....										1			1						1			1	2	
Total nutritional diseases.....	8	13	8	9	6	8	7	11	5	12	5	13	19	33	20	33	9	14	11	10	9	4	7	15
CLASS V.—VIOLENCE.																								
Order 1.— <i>Accidents and negligence.</i>																								
Injury from falls.....	1			3	1			2	1	1		6	2	1	1				1					2
Gunshot wound.....								2				2												
Railroad accident.....	1			1								1												
Fall of lumber.....																								
Drowned.....	2	1					3			5	1													1
Scald.....			1																					
Neglect at birth.....				1						1														
Street-car accident.....																								

TABLE 1.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1880.												1881.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	Total second quarter.						January.						February.						March.						Total third quarter.						April.						May.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	W.	F.	M.	C.	W.	C.	W.	F.	M.	F.	C.	W.	C.	W.	F.	M.	F.	C.	W.	C.	W.	F.	M.	F.	C.	W.	C.	W.	F.	M.	F.	C.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
CLASS IV.—DEVELOPMENTAL DISEASES.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Order 2.—Women.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Puerperal fever.....	2	1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

TABLE 1.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1881.												AGE OF DECEDENT.															
	June.						Total fourth quarter.						Under 1 year.			1 to 2 years.			2 to 3 years.			3 to 4 years.			4 to 5 years.			
	W.		C.		Total		W.		C.		Total		W.		C.	W.		C.	W.		C.	W.		C.	W.		C.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
CLASS IV.—DEVELOPMENTAL DISEASES.																												
Order 2.— <i>Women.</i>																												
Puerperal fever.....	1					2																						
septicæmia.....						1																						
metro-peritonitis.....																												
metritis.....																												
hemorrhage.....																												
peritonitis.....						1																						
Placenta prævia.....																												
Miscarriage.....	1					1																						
Phlegmasia dolens.....																												
Pregnancy.....	1					1																						
Postpartum hemorrhage.....																												
Total diseases of women.....	4		1		7		3																					
Order 3.— <i>Old Age.</i>																												
Senile debility.....	2	4	4	3	9	12	10	11																				
Gangrene.....									2																			
Total diseases of old age.....	2	4	4	3	9	14	10	11																				
Order 4.— <i>Nutrition.</i>																												
Debility or asthenia.....	2				3		1																					
Total nutrition diseases.....	2				3		1																					
Total developmental diseases.....	9	13	10	6	24	30	26	20	56	45	48	48																
CLASS V.— <i>VIOLENCE.</i>																												
Order 1.— <i>Accidents and negligence.</i>																												
Injury from falls.....	2				2	5			1																			
Gunshot wound.....																												
Railroad accident.....																												
Fall of lumber.....																												
Drowned.....																												
Scald.....																												
Neglect at birth.....																												
Street-car accident.....																												

TABLE 1.—DRAIDN.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	AGE OF DECEDENT.																							
	5 to 10 years.				10 to 20 years.				20 to 30 years.				30 to 40 years.				40 to 50 years.				50 to 60 years.			
	W.	M.	F.	C.	W.	M.	F.	C.	W.	M.	F.	C.	W.	M.	F.	C.	W.	M.	F.	C.	W.	M.	F.	C.
CLASS IV.—DEVELOPMENTAL DISEASES.																								
Order 2.— <i>Women.</i>																								
Puerperal fever.....																								
septicemia.....																								
metro peritonitis.....																								
metritis.....																								
hemorrhage.....																								
peritonitis.....																								
Placenta previa.....																								
Miscarriage.....																								
Phlegmatie dolens.....																								
Pregnancy.....																								
Postpartum hemorrhage.....																								
Total diseases of women.....																								
Order 3.— <i>Old age.</i>																								
Senile debility.....																								
Gangrene.....																								
Total diseases of old age.....																								
Order 4.— <i>Nutrition.</i>																								
Debility or asthenia.....																								
Total nutrition diseases.....																								
Total developmental diseases.....																								
CLASS V.— <i>VIOLENCE.</i>																								
Order 1.— <i>Accidents and negligence.</i>																								
Injury from falls.....																								
Gunshot wound.....																								
Railroad accident.....																								
Fall of lumber.....																								
Drowned.....																								
Scald.....																								
Neglect at birth.....																								
Street-car accident.....																								

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLORS, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	AGE OF DECEDENT.												SOCIAL RELATIONS.												
	70 to 80 years.				80 to 90 years.				90 to 100 years.				Above 100 yrs.				Married.				Single.				
	W.		C.		W.		C.		W.		C.		W.		C.		W.		C.		W.		C.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
CLASS IV.—DEVELOPMENTAL DISEASES.																									
Order 2.—Women.																									
Puerperal fever.....																		6		1			1		2
septicemia.....																		3						2	2
metro peritonitis.....																		1		1					1
nutritia.....																		1							
hemorrhage.....																				2					
peritonitis.....																				2					
Placenta previa.....																		1							
Miscarriage.....																		1							
Pilemiasis dolens.....																		1							
Pregnancy.....																		2							
Postpartum hemorrhage.....																				1					
Total diseases of women.....																		20		15			1		5
Order 3.—Old age.																									
Senile debility.....	17	29	14	15	10	23	14	17	3	8	5	10						6	12	7	21	2	7	8	1
Gangrene.....	1				1							1						1	1	2					
Total diseases of old age.....	17	30	14	15	11	23	14	17	3	8	5	11						6	13	9	21	3	7	8	1
Order 4.—Nutrition.																									
Debility or asthenia.....																			1				2	3	1
Total nutrition diseases.....																			1				2	3	1
Total developmental diseases.....	17	30	14	15	11	23	14	17	3	8	5	11						6	13	30	21	18	9	12	7
CLASS V.—VIOLENCE.																									
Order 1.—Accidents and negligence.																									
Injury from falls.....	1	2				1													5	2	2				
Gunshot wound.....																		3	8						
Railroad accident.....																		2	2			1			
Fall of lumber.....																									
Drowned.....																		1			1		1		1
Scald.....																									
Neglect at birth.....																									
Street car accident.....																									

TABLE 1.—*DRAFTING. SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1884.*

Cause of death.	SOCIAL RELATIONS.										NATIVITY.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	Widow or widower.					Unknown.					District of Columbia.					Other parts of United States.					Foreign.					Unknown.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	W.		C.		M.	W.		C.		F.	W.		C.		M.	W.		C.		M.	W.		C.		F.	W.		C.		M.	W.		C.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.	M.	F.	M.	F.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
CLASS IV.—DEVELOPMENTAL DISEASES.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Order 2.—Women.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Puerperal fever																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									</

TABLE I.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	Total deaths from each cause.	Per cent of each cause to total mortality.	DEATH-RATE.		RECAPITULATION.						Total.	Per cent of each cause to total mortality under 5 years of age.			
			Deaths per 1,000 inhabitants.		Total by color and sex.			Total by color.							
			W.	C.	W.			W.							
					M.	F.	C.	M.	F.	C.					
													M.	F.	C.
CLASS V.—VIOLENCE.															
Order 1.—Accidents and negligence—Continued.															
Run over by street roller	1	.024	.008										1	.024	
Bite of spider	1	.024	.008										1	.024	
Lead poison	2	.048	.016										2	.048	
Run over by wagon	2	.048	.032										2	.048	
Drinking concentrated lye	2	.048	.032										2	.048	
Burns	15	.363	.049	.146	1	5	6	6	9	11	1	3	15	.363	
Choked while eating	1	.024	.008										1	.024	
Thrown from a buggy	1	.024	.008										1	.024	
Fracture of the femur	1	.024	.008										1	.024	
Run over by railroad cars	1	.024	.008										1	.024	
Traumatic tetanus	4	.097	.008	.016	1	3	4	1	3	1	1	1	4	.097	
Peritonitis from injury	1	.024	.008										1	.024	
Neglect	3	.073	.008	.016	1	1	2	1	2	1	1	1	3	.073	
Blow upon head	6	.145	.008	.016	1	4	5	1	5	1	1	1	6	.145	
Overload by mother	1	.024	.008	.016	1	1	2	1	2	1	1	1	1	.024	
Kick of mule	1	.024	.008	.016	1	1	2	1	2	1	1	1	1	.024	
Bite of insect	1	.024	.008	.016	1	1	2	1	2	1	1	1	1	.024	
Amputation of foot	4	.097	.033		3	1	4	3	1	3	1	1	4	.097	
Fracture of skull	1	.024	.008		1		1	1		1		1	1	.024	
Overdose of morphine and hydrate of chloral.	1	.024	.008	.016	1		1	1		1		1	1	.024	
Crushed under falling tree	1	.024	.008	.016	1		1	1		1		1	1	.024	
Overdose of morphine	1	.024	.008	.016	1		1	1		1		1	1	.024	
Injury of spine	1	.024	.008	.016	1		1	1		1		1	1	.024	
Amputation of leg	1	.024	.008	.016	1		1	1		1		1	1	.024	
Unilateral hemorrhage	6	.121	.081	.016	3	2	5	3	2	5	3	2	6	.121	
Fracture of neck of femur	1	.024	.008	.016	1		1	1		1		1	1	.024	
Concussion of brain	1	.024	.008	.016	1		1	1		1		1	1	.024	
Injury to perineum	1	.024	.008	.016	1		1	1		1		1	1	.024	
Laceration of liver	1	.024	.008	.016	1		1	1		1		1	1	.024	
Crushed in elevator	1	.024	.008	.016	1		1	1		1		1	1	.024	
Total accidents and negligence	116	2.805	.530	.825	42	23	65	51	43	94	6	12	14	38	.919

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1880.											
	July.			August.			September.			Total first quarter.		
	October.			November.			December.					
	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.
CLASS V.—VIOLENCE.												
Order 1.—Accidents and negligence—Continued.												
Run over by street roller												
Bite of spider												
Lead-poison												
Run over by wagon												
Drinking concentrated lye												
Burns												
Smothered												
Choked while eating												
Thrown from a buggy												
Fracture of the femur												
Run over by railroad cars												
Traumatic tetanus												
Peritonitis from injury												
Neglect												
Blow upon head												
Overlaid by mother												
Kick of mule												
Bite of insect												
Amputation of foot												
Fracture of skull												
Overdose of morphine and hydrate of chloral												
Crushed under falling tree												
Overdose of morphine												
Injury of spine												
Amputation of leg												
Umbilical hemorrhage												
Fracture of neck of femur												
Concussion of brain												
Injury to perineum												
Laceration of liver												
Crushed in elevator												
Total accidents and negligence	6	1	1	8	1	2	1	7	3	1	21	5
											4	2
											4	2
											6	2
											2	2
											5	2
											7	1
											4	1

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.	1890.												1891.																													
	Total second quarter.						January.						February.						March.						Total third quarter.						April.						May.					
	W.			C.			W.			C.			W.			C.			W.			C.			W.			C.			W.			C.			W.			C.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.						
CLASS V.—VIOLENCE.																																										
Order 1.—Accidents and negligence—Continued.																																										
Run over by street roller.....																																										
Bite of spider.....																																										
Lead-poison.....	1																																									
Run over by wagon.....				1																																						
Drinking concentrated lye.....																																										
Burns.....	1	1	3	2						1																																
Smothered.....																																										
Choked while eating.....	1																																									
Thrown from a buggy.....																																										
Fracture of the femur.....	1																																									
Run over by railroad cars.....																																										
Traumatic tetanus.....	1			3																																						
Peritonitis from injury.....																																										
Neglect.....																																										
Blow upon head.....	1																																									
Overlaid by mother.....																																										
Kick of mule.....																																										
Bite of insect.....																																										
Amputation of foot.....	1																																									
Fracture of skull.....	2																																									
Overdose of morphine and hydrate of chloral.....	1																																									
Crushed under falling tree.....																																										
Overdose of morphine.....																																										
Injury of spine.....																																										
Amputation of leg.....																																										
Unilateral hemorrhage.....																																										
Fracture of neck of femur.....																																										
Concussion of brain.....																																										
Injury to perineum.....																																										
Laceration of liver.....																																										
Crushed in elevator.....																																										
Total accidents and negligence.....	13	3	15	4			1	2	3	1	4	2	5	2	4	2	2	3	9	6	10	2	1	2	3	3										1						

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1880.

Cause of death.	AGE OF DECEDENT.															
	5 to 10 years.				10 to 20 years.				20 to 30 years.				30 to 40 years.			
	W.		C.		W.		C.		W.		C.		W.		C.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
CLASS V.—VIOLENCE.																
Order 1.—Accidents and negligence—Continued.																
Run over by street roller.....	1															
Bite of spider.....																
Lead-poison.....																
Run over by wagon.....	2															
Drinking concentrated lye.....																
Burns.....	1	3	1	1												
Smothered.....																
Choked while eating.....																
Thrown from a buggy.....																
Fracture of the femur.....																
Run over by railroad cars.....																
Traumatic tetanus.....																
Peritonitis from injury.....	1															
Neglect.....																
Blow upon head.....																
Overlaid by mother.....																
Kick of mule.....																
Bite of insect.....																
Amputation of foot.....																
Fracture of skull.....																
Overdose of morphine and hydrate of chloral.....																
Crushed under falling tree.....																
Overdose of morphine.....	1															
Injury of spine.....																
Amputation of leg.....																
Unilateral hemorrhage.....																
Fracture of neck of femur.....																
Concussion of brain.....																
Injury to pericardium.....																
Laceration of liver.....																
Crushed in elevator.....																
Total accidents and negligence.....	3	4	6	1	5	1	1	1	4	4	2	9	2	3	7	3
															5	4
															1	1
															1	1

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBERS OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Causes of death.	AGE OF DECEDENT.												SOCIAL RELATIONS.								
	70 to 80 years.			80 to 90 years.			90 to 100 years.			Above 100 yrs.			Married.			Single.					
	W.		C.	W.		C.	W.		C.	W.		C.	W.		C.	W.		C.			
	M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.				
CLASS V.—VIOLENCE.																					
Order 1.—Accidents and negligence—Continued.																					
Run over by street roller																					
Bite of spider																					
Lead-poison																1					
Run over by wagon																					
Drinking concentrated lye																					
Burns																					
Smothered																					
Choked while eating																					
Thrown from a buggy																					
Fracture of the femur	1																				
Run over by railroad cars																					
Traumatic tetanus																					
Peritonitis from injury																					
Neglect																					
Blow upon head																					
Overlaid by mother																					
Kick of mule																					
Bite of insect																					
Amputation of foot																					
Fracture of skull																					
Overdose of morphine and hydrate of chloral																					
Crushed under falling tree																					
Overdose of morphine																					
Injury of spine																					
Amputation of leg																					
Umbilical hemorrhage																					
Fracture of neck of femur																					
Concussion of brain																					
Injury to perineum																					
Laceration of liver																					
Crushed in elevator																					
Total accidents and negligence	2	2	1													17	5	4	7	1	5

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	SOCIAL RELATIONS.										NATIVITY.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	Widow or widower.					Unknown.					District of Columbia.					Other parts of United States.					Foreign.					Unknown.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	W.		C.		F.	W.		C.		F.	W.		C.		F.	W.		C.		F.	W.		C.		F.	W.		C.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.	M.	F.	M.	F.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
CLASS V.—VIOLENCE.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Order 1.—Accidents and negligence—Continued.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Run over by street roller																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

TABLE 1.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH RATES FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.	DEATH RATE.		RECAPITULATION.															
	Total deaths from each cause.	Per cent of each cause to total mortality.	Deaths per 1,000 inhabitants.				Total by color and sex.						Total by sex.				Total.	Per cent. of each cause to total mortality under 5 years of age.
			W.	C.	W.		C.		W.	C.	M.	F.	M.	F.	W.	C.		
					M.	F.	M.	F.										
CLASS V.—VIOLENCE.																		
Order 2.—Judicial execution.																		
Hanging.....	2	.048																
Total judicial execution.....	2	.048		.032			2											
Order 3.—Homicide.																		
Fracture of skull.....	5	.121	.033	.016	3	1			1									
Punctured wound of lung.....	1	.024	.008	.016				1										.145
Infanticide.....	6	.145	.081					2	3									.024
Gunshot wound.....	3	.073	.016	.016	1	1		1										.024
Incised wound of throat.....	1	.024	.016					1										.024
Willful neglect.....	1	.024	.008			1												.024
Total homicide.....	17	.411	.066	.146	4	4	4	5	4									.218
Order 4.—Suicide.																		
Drowning.....	1	.024	.008		1													
Gunshot wound.....	1	.024	.008		1													
Burns.....	1	.024	.008			1												
Cyanide potassium.....	1	.024	.008															
Hanging.....	2	.048	.016		1	1												
Incised wound of throat.....	1	.024	.008		1													
Incised wound of arm.....	1	.024	.008		1													
Arsenic.....	1	.024	.008		1													
Corrosive sublimate.....	1	.024	.008		1													
Laudanum.....	1	.024	.008		1													
Total suicides.....	11	.266	.091		7	4												
Total violence.....	146	3.530			53	31	38	24										

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	1881.												AGE OF DECEDENT.															
	June.						Total fourth quarter.						Under 1 year.			1 to 2 years.			2 to 3 years.			3 to 4 years.			4 to 5 years.			
	W.		C.		M. F.		W.		C.		M. F.		W.	C.	M. F.	W.	C.	M. F.	W.	C.	M. F.	W.	C.	M. F.	W.	C.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
CLASS V.—VIOLENCE. Order 2.— <i>Judicial execution.</i> Hanging..... Total judicial execution..... Order 3.— <i>Homicide.</i> Fracture of skull..... Punctured wound of lung..... Infanticide..... Gunshot wound..... Incised wound of throat..... Willful neglect..... Total homicide..... Order 4.— <i>Suicide.</i> Drowning..... Gunshot wound..... Burns..... Cyanide potassium..... Hanging..... Incised wound of throat..... arm..... Arsenic..... Corrosive sublimate..... Laudanum..... Total suicides..... Total violence.....																												

TABLE 1.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1890.

Cause of death.	AGE OF DECEASED.											
	5 to 10 years.		10 to 20 years.		20 to 30 years.		30 to 40 years.		40 to 50 years.		50 to 60 years.	
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.
M. F. M. F.	M. F. M. F.	M. F. M. F.	M. F. M. F.	M. F. M. F.	M. F. M. F.	M. F. M. F.	M. F. M. F.	M. F. M. F.	M. F. M. F.	M. F. M. F.	M. F. M. F.	M. F. M. F.
Class V.—VIOLENCE.												
Order 2.—Judicial execution.												
Hanging.....												
Total judicial execution.....												
Order 3.—Homicide.												
Fracture of skull.....												
Punctured wound of lung.....												
Infanticide.....												
Gunshot wound.....												
Incised wound of throat.....												
Willful neglect.....												
Total homicide.....												
Order 4.—Suicide.												
Drowning.....												
Gunshot wound.....												
Burns.....												
Cyanide potassium.....												
Hanging.....												
Incised wound of throat.....												
Incised wound of arm.....												
Arsenic.....												
Corrosive sublimate.....												
Laudanum.....												
Total suicides.....												
Total violence.....												

TABLE I.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.	SOCIAL RELATIONS.						NATIVITY.											
	Widow or widower.			Unknown.			District of Columbia.				Other parts of United States.				Foreign.			
	W.	M.	F.	C.	W.	M.	F.	M.	F.	C.	W.	M.	F.	C.	W.	M.	F.	C.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
CLASS V.—VIOLENCE.																		
Order 2.— <i>Judicial execution.</i>																		
Hanging.....												2						
Total judicial execution.....												2						
Order 3.— <i>Homicide.</i>																		
Fracture of skull.....					1								1	2	1			
Punctured wound of lung.....						1												
Infanticide.....							3											
Gunshot wound.....							1					1						
Incised wound of throat.....							1											
Willful neglect.....						1												
Total homicide.....					1	2	4	3			1	1	1	2	1			
Order 4.— <i>Suicide.</i>																		
Drowning.....																		
Gunshot wound.....					1						1							
Burns.....												1			1			
Cyanide potassium.....															1			
Hanging.....															1			
Incised wound of throat.....															1			
arm.....															1			
Arsenic.....																		
Corrosive sublimate.....																		
Laudanum.....															1			
Total suicides.....											2	2			4	2		
Total violence.....	2	6	1	1	2		19	13	24	20	16	11	14	4	17	7	1	

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	DEATH-RATE.										RECAPITULATION.										Per cent. of each cause to total mor.			
	Total deaths from each cause.		Per cent. of each cause to total mortality.		Deaths per 1,000 inhabitants.		Total by color and sex.				Total by color.		Total by sex.		Total under 5 years.				Total.					
							W.		C.						W.		C.					M.		F.
							W.	C.	M.	F.	W.	C.	M.	F.	W.	M.	F.	M.	F.	M.		F.	M.	F.
I. Zymotic diseases.....	907	21.929	4.452	5.938	292	248	181	186	540	367	473	434	173	140	136	589	14	241						
II. Constitutional diseases.....	1,080	26.112	4.477	6.689	274	269	225	312	543	537	499	581	35	26	72	74	207	74	207					
III. Local diseases.....	1,550	37.476	6.554	12.217	461	384	392	832	795	755	697	117	90	319	209	635	15,353	209	635					
IV. Developmental diseases.....	458	10.953	2.003	3.398	90	144	85	125	243	210	184	269	58	45	48	48	200	48	200					
V. Violence.....	146	3.530	0.682	1.003	53	31	28	24	84	63	91	55	6	6	16	17	47	16	17					
Grand total.....	4,136	100.000	18.178	31.245	1,179	1,026	921	1,010	2,205	1,931	2,100	2,036	389	309	496	1,678	40	571						
I. Miasmatic diseases.....	768	18.569	3.853	4.854	243	225	145	155	468	300	388	380	140	121	106	107	474	11	490					
II. Infective diseases.....	114	2.756	0.91	1.129	40	16	31	27	56	5	7	10	4	5	4	5	15	2,373	15					
III. Parasitic diseases.....	6	0.145	0.016	0.016	4	1	1	1	5	1	1	1	1	1	1	1	6	145	6					
IV. Tubercular diseases.....	146	3.530	0.816	1.760	36	63	13	35	99	47	48	96	4	1	2	4	097	4	097					
V. Diseases of nervous system.....	984	23.553	3.061	7.929	206	213	217	277	444	480	451	433	24	26	70	73	233	5,968	73					
VI. Respiratory diseases.....	594	12.911	2.374	3.990	181	107	133	114	288	246	318	221	47	33	83	83	208	7,754	83					
VII. Circulatory diseases.....	166	4.066	1.793	4.968	42	41	88	95	74	94	75	1	47	36	107	111	301	7,073	1					
VIII. Digestive diseases.....	525	12.663	1.797	3.368	120	69	44	38	129	82	113	98	19	17	24	20	80	7,278	19					
IX. Diseases of the urinary system.....	211	5.101	1.063	1.502	33	17	18	13	50	31	51	30	11	1	5	1	121	1,964	11					
X. Diseases of the reproductive organs.....	81	1.953	0.41	0.681	2	5	5	5	5	5	5	5	10	1	5	5	3	121	5					
XI. Locomotory and osseous diseases.....	10	0.243	0.016	0.016	2	1	1	1	3	6	3	6	1	1	1	1	3	072	1					
XII. Integumentary diseases.....	8	0.193	0.016	0.016	3	5	4	4	8	7	5	7	5	2	2	1	5	131	2					
XIII. Diseases of children.....	200	4.836	0.849	1.570	56	45	49	48	103	97	147	93	56	45	49	48	200	4,836	48					
XIV. Old age.....	45	1.083	0.181	0.372	22	22	22	22	22	22	22	22	45	45	45	45	45	1,083	45					
XV. Old age, women.....	197	4.763	0.869	1.424	37	72	36	52	109	88	73	124	73	124	73	124	73	4,763	73					
XVI. Nutrition.....	11	0.266	0.074	0.074	4	5	5	5	9	2	4	2	4	2	4	2	4	266	4					

TABLE I.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1891.

1890.

Cause of death.	July.			August.			September.			Total first quarter.			October.			November.			December.							
	W.		C.	W.		C.	W.		C.	W.		C.	W.		C.	W.		C.	W.		C.					
	M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.						
RECAPITULATION.																										
I.	32	31	27	36	25	19	24	27	24	29	24	25	75	88	36	35	19	20	23	14	11	23	29	10	6	
II.	17	23	11	18	17	25	18	19	21	18	18	20	55	67	57	26	19	20	23	17	13	27	25	15	20	
III.	34	24	34	34	26	38	30	38	22	30	38	22	78	92	38	15	28	27	31	21	37	43	35	26	35	
IV.	8	13	8	9	8	7	11	5	12	5	13	5	18	19	8	14	11	11	10	9	4	15	15	3	9	
V.	9	1	1	1	1	2	1	1	2	3	2	1	24	5	5	2	6	3	8	2	7	7	5	5	
Grand total.....																										
	100	92	81	98	77	77	94	105	92	87	81	282	261	245	273	103	85	84	92	90	72	59	109	102	59	70
I. Miasmatic diseases.....																										
	28	23	24	32	17	18	20	23	27	29	21	20	73	69	65	75	31	34	15	18	17	23	21	27	7	3
II. Infective diseases.....																										
	4	8	3	4	8	1	4	4	6	1	1	3	18	9	8	11	5	1	4	2	3	1	1	1	3	3
III. Diathetic diseases.....																										
	1	4	1	1	5	1	1	1	1	1	1	1	1	1	3	2	2	4	3	4	5	2	4	2	2	2
IV. Diseases of nervous system.....																										
	16	19	11	17	20	11	9	10	16	14	18	8	43	31	39	13	24	15	20	12	11	23	20	31	15	18
V. Circulatory diseases.....																										
	18	6	12	13	9	11	9	10	16	8	14	2	10	9	10	2	10	9	10	10	13	14	15	9	11	9
VI. Respiratory diseases.....																										
	4	4	5	7	14	5	2	6	10	5	6	8	14	13	21	32	2	4	7	11	6	8	15	10	12	2
VII. Digestive diseases.....																										
	7	7	1	3	4	7	6	8	9	4	7	2	30	18	18	18	14	6	3	6	5	2	3	6	2	2
VIII. Diseases of the urinary system.....																										
	1	1	1	2	2	4	1	2	2	2	1	3	9	4	3	9	4	3	2	2	2	2	4	2	1	1
IX. Locomotory and osseous diseases.....																										
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
X. Integumentary diseases.....																										
	5	5	3	5	5	5	6	1	3	5	5	5	11	13	12	16	7	4	8	2	7	3	7	4	8	5
XI. Diseases of children.....																										
	3	3	2	2	1	2	2	3	4	8	1	4	8	15	7	9	2	10	3	7	2	4	2	2	2	2
XII. Old age.....																										
	3	5	5	2	1	2	2	3	4	8	1	4	8	15	7	9	2	10	3	7	2	4	2	7	7	2
XIII. Nutrition.....																										
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
1881.													1890.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
Total second quarter.						January.						February.						March.						Total third quarter.						April.						May.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Cause of death.						W.			C.			W.			C.			W.			C.			W.			C.			W.			C.			W.			C.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
						M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.</

TABLE I.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.		1881.												AGE OF DECEDENT.															
		June.				Total fourth quarter.				Under 1 year.				1 to 2 years.				2 to 3 years.				3 to 4 years.				4 to 5 years.			
		W.		C.		W.		C.		W.		C.		W.		C.		W.		C.		W.		C.		W.		C.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
I.	Zymotic diseases.....	41	21	23	18	74	44	39	33	84	55	91	90	21	26	23	26	28	26	23	8	10	17	8	8	15	10	5	2
II.	Constitutional diseases.....	20	19	22	24	70	61	68	91	15	13	23	24	10	8	24	23	5	3	17	17	4	1	3	6	1	5	4	
III.	Local diseases.....	25	19	20	23	123	83	96	81	74	56	140	151	31	17	45	37	9	8	24	17	8	6	9	3	1	5	4	
IV.	Developmental diseases.....	9	13	10	6	24	30	26	20	59	45	48	48	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
V.	Violence.....	2	2	5	9	9	9	8	4	2	4	9	14	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Grand total.....		97	73	79	71	309	327	337	238	237	173	314	337	65	61	99	86	40	33	53	44	20	27	21	19	13	8	13	8
I.	Miasmatic diseases.....	39	19	19	15	66	39	30	27	56	37	61	65	28	35	26	24	26	23	7	8	15	17	8	8	15	10	4	2
	Euthetic diseases.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	Dietic diseases.....	2	1	3	2	1	6	3	8	4	2	22	12	26	23	1	2	2	1	1	2	2	2	2	2	2	2	2	1
	Parasitic diseases.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
II.	Diathetic diseases.....	2	6	1	7	9	20	4	13	15	13	23	23	9	8	24	23	5	3	8	15	17	4	1	3	6	1	5	4
	Tubercular diseases.....	18	13	21	17	61	41	29	26	26	24	24	74	67	7	3	6	5	3	3	8	1	2	3	3	1	1	1	1
	Diseases of nervous system.....	1	3	1	1	16	9	7	7	7	7	11	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Circulatory diseases.....	1	3	1	1	9	23	20	33	35	30	19	50	71	10	9	20	26	3	4	21	13	3	2	7	1	1	2	1
III.	Respiratory diseases.....	7	1	1	1	9	23	20	33	35	30	19	50	71	10	9	20	26	3	4	21	13	3	2	7	1	1	2	1
	Digestive diseases.....	7	5	5	2	18	17	12	6	13	12	14	13	4	3	8	5	2	1	1	2	1	1	1	1	1	1	1	1
	Diseases of the urinary system.....	2	1	3	3	9	5	7	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Diseases of the generative organs.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IV.	Locomotory and osseous diseases.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Integumentary diseases.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Diseases of children.....	7	3	6	2	15	6	15	5	56	45	48	48	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Old age.....	2	4	4	3	9	14	10	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Nutrition.....		2	4	4	3	9	14	10	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	AGE OF DECEDENT.											
	5 to 10 years.			10 to 20 years.			20 to 30 years.			30 to 40 years.		
	W.	M.	F.	W.	M.	F.	W.	M.	F.	W.	M.	F.
I. Zymotic diseases.....	27	30	13	10	8	15	7	8	14	17	6	11
II. Constitutional diseases.....	6	5	15	11	17	17	37	60	52	51	83	53
III. Local diseases.....	4	14	9	7	10	19	6	7	16	12	10	13
IV. Developmental diseases.....	3	4	6	1	5	1	3	4	4	5	3	12
V. Violence.....	40	53	43	29	34	53	38	48	94	69	72	129
Grand total.....	27	30	13	10	8	15	7	8	14	17	6	11
I. Miasmatic diseases.....	1	1	1	1	2	2	2	3	53	49	2	4
II. Infective diseases.....	1	4	14	10	9	15	17	26	53	49	2	4
III. Diseases of nervous system.....	1	5	3	1	4	5	1	2	5	2	3	2
IV. Circulatory diseases.....	2	6	2	4	4	7	2	1	9	2	4	10
V. Digestive diseases.....	1	2	1	1	1	1	1	1	2	1	2	1
VI. Diseases of the urinary system.....	2	1	1	1	1	1	1	2	1	1	1	1
VII. Diseases of the generative organs.....	1	1	1	1	1	1	1	1	1	1	1	1
VIII. Locomotory and osseous diseases.....	1	1	1	1	1	1	1	1	1	1	1	1
IX. Integumentary diseases.....	1	1	1	1	1	1	1	1	1	1	1	1
X. Diseases of children.....	1	1	1	1	1	1	1	1	1	1	1	1
XI. Old age.....	1	1	1	1	1	1	1	1	1	1	1	1
XII. Starvation.....	1	1	1	1	1	1	1	1	1	1	1	1

TABLE I.—DEATHS.—SHOWING TOTAL NUMBERS OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, BY SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	AGE OF DECEDENT.												SOCIAL RELATIONS.					
	70 to 80 years.				80 to 90 years.				90 to 100 years.				Married.			Single.		
	W.		C.		W.		C.		W.		C.		W.		C.		W.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
I. Zymotic diseases.....	5	6	3	1	2	1	3						41	35	9	15	32	14
II. Constitutional diseases.....	10	8	3	9	3	1	2	3					101	114	66	106	92	50
III. Local diseases.....	49	45	22	24	9	10	9	9					200	96	101	61	79	25
IV. Developmental diseases.....	17	30	14	15	11	23	14	17	3	8	5	11	13	30	21	18	9	12
V. Violence.....	2	2	1		1								23	10	6	5	12	2
Grand total.....	83	91	40	51	24	37	26	32	3	10	5	15	378	285	203	205	224	103
Miasmatic diseases.....	5	6	2	1	2	1	3						33	33	8	15	26	13
Euthetic diseases.....			1										8	1	1		1	1
Parasitic diseases.....																		
Diathetic diseases.....	5	5	4	2	1	1	1	1					19	30	8	20	7	8
Diseases of nervous system.....	17	12	11	11	5	5	3	2	1				68	82	58	86	85	42
Circulatory diseases.....	7	10	3	6	3	1	1	1					28	27	29	10	38	6
Respiratory diseases.....	8	9	4	2	1	2	5	5					24	14	26	18	11	6
Digestive diseases.....	13	13	1	3	1	1	1	1					46	24	24	20	16	6
Diseases of the urinary system.....	4	3	3	2									35	21	11	7	6	3
Diseases of the generative organs.....		1											23	5	9	3	6	3
Locomotor and osseous diseases.....													3	3	2		1	1
Intergumentary diseases.....														2	1	1		2
Diseases of children.....																		
Diseases of women.....																		
IV. Old age.....	17	30	14	15	11	23	14	17	3	8	5	11	13	9	21	15	7	8
Nutrition.....														1			2	3

TABLE I.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	SOCIAL RELATIONS.										NATIVITY.									
	Widow or widower.					Unknown.					District of Columbia.					Other parts of United States.				
	W.		C.		F.	W.		C.	F.	M.	W.		C.		F.	W.		C.		F.
	M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.	
	10	14	3	8	1	197	188	192	150	55	49	29	26	40	16	34	40	34	14	1
I. Zymotic diseases.....	24	56	6	33	5	1	96	102	103	132	110	109	121	180	68	58	1	1	1	1
II. Constitutional diseases.....	45	90	23	54	6	1	168	138	243	235	165	132	147	128	127	64	1	1	1	3
III. Local diseases.....	18	56	15	50	1	1	59	61	49	57	17	53	85	68	30	1	1	1	1	1
IV. Developmental diseases.....	2	6	1	1	2	19	13	24	20	16	11	14	4	17	7	1	1	1	1	1
V. Violence.....	99	222	51	146	16	1	539	497	571	594	863	354	246	416	275	175	3	2	2	2
Grand total.....	9	13	3	7	1	160	165	120	131	49	46	25	34	34	14	34	34	14	14	1
I. { Miasmatic diseases.....	1	1	1	1	1	4	4	3	3	1	3	3	1	2	1	6	1	1	1	1
{ Etiologic diseases.....	1	1	1	1	1	20	12	28	27	5	3	3	3	3	3	6	1	1	1	1
{ Diabetic diseases.....	1	1	1	1	1	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1
{ Parasitic diseases.....	6	22	1	7	1	1	8	18	8	16	39	11	27	13	16	1	1	1	1	1
{ Tubercular diseases.....	18	34	5	26	5	1	88	84	102	124	94	79	110	133	56	43	1	1	1	1
{ Diseases of nervous system.....	19	31	9	26	4	2	59	47	93	79	72	41	88	35	49	19	1	1	1	1
{ Circulatory diseases.....	11	15	4	9	1	1	13	13	13	6	22	23	27	27	19	7	1	1	1	1
{ Respiratory diseases.....	4	19	8	10	1	1	63	45	107	114	33	45	45	41	26	16	1	1	1	1
{ Digestive diseases.....	3	17	3	5	1	1	25	21	35	27	22	19	11	21	20	1	1	1	1	1
{ Diseases of the urinary system.....	3	6	3	3	1	7	9	4	4	16	7	14	9	10	1	1	1	1	1	1
{ Diseases of the generative organs.....	1	1	1	1	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1
{ Locomotor and osseous diseases.....	1	1	1	1	1	1	3	1	1	1	2	3	1	1	1	1	1	1	1	1
{ Integumentary diseases.....	1	1	1	1	1	57	45	49	49	1	1	1	1	1	1	1	1	1	1	1
II. { Diseases of children.....	17	56	15	49	1	3	9	9	4	15	10	35	19	20	36	1	1	1	1	1
{ Old age.....	1	1	1	1	1	3	7	7	5	1	3	1	1	3	1	1	1	1	1	1
{ Nutrition.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

TABLE 1.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.	Total deaths from each cause.	Per cent of each cause to total mortality.	DEATH-RATE.				RECAPITULATION.												Per cent of each cause to total mortality.
			Deaths per 1,000 inhabitants.				Total by color and sex.				Total by color.				Total by sex.				
			W.		C.		W.		C.		W.		C.		W.		C.		
			M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
V. { Accidents and negligence Homicide Suicide Judicial hanging Grand total from all causes by sex	116	2.805	0.536	45	23	31	20	65	51	73	43	6	6	12	14	38	.919		
	17	0.411	0.096	4	4	5	4	8	9	9	8	2	2	4	3	9	.218		
	11	0.266	0.091	7	4	3	2	11	2	7	4	1	1	1	1	1	1		
	2	0.048	0.002	1	1	1	1	2	2	2	2	1	1	1	1	1	1		
	4,136	100.000	18.178	1,179	1,026	921	1,010	2,205	1,331	2,100	2,036	389	309	496	494	1,678	40.571		
Grand total from all causes by color				2,205		1,331						608		940					
Grand total from all causes by color				53.312		46.668						16.83		22.60					
Percentage from all causes by color in each period of life to total mortality																			
Rate of death per 1,000 inhabitants (white and colored).....				12.178		31.245						6.75		15.86					
Death-rate per 1,000 inhabitants (total)	22.569			12.043		10.546						3.81		5.35		9.16			

TABLE 1.—DEATHS—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1891.

Cause of death.	1890.												1891.																																																																							
	Total second quarter.						January.						February.						March.						Total third quarter.						April.						May.																																															
	W.		C.				W.		C.		W.		C.		W.		C.		W.		C.		W.		C.		W.		C.		W.		C.																																																			
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.																																																				
V. { Accidents and negligence Homicide Suicide Judicial hanging }																																																																																				
	12	3	15	4	1	3	3	1	4	2	5	2	4	2	3	3	9	6	10	2	1	2	3	3	3	1																																																										
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	3	1	1	2	3	1	1	3																																																										
	3	3	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3																																																										
	302	259	302	237	102	100	93	76	97	79	79	107	87	100	96	89	286	279	237	272	101	90	104	111	64	68	53																																																									
Grand total from all causes by color							561						439						565						509						191						194						175						131																																			
Percentage from all causes by color in each period of life to total mortality	13.57						10.61						4.83						3.84						4.26						4.50						4.52						4.47						13.65						12.31						4.63						4.69						4.23						2.92					
Rate of death per 1,000 inhabitants (white and colored)	4.62						7.11						1.06						2.23						1.45						2.01						1.54						2.99						4.65						3.23						1.57						2.14						1.44						1.96					
Death-rate per 1,000 inhabitants (total)	2.96						2.39						1.10						0.75						0.96						1.02						1.02						1.01						2.08						2.73						1.04						1.06						0.96						0.66					

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Cause of death.	1891.										AGE OF DECEASED.																								
	June .				Total fourth quarter.						Under 1 year.					1 to 2 years.					2 to 3 years.					3 to 4 years.					4 to 5 years.				
	W.		C.		W.		C.		W.		C.		W.		C.		W.		C.		W.		C.		W.		C.		W.		C.				
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.			
V. { Accidents and negligence..... Homicide..... Suicide..... Infanticide hanging..... }																																			
	2	4			5	6	4	2	2	6	11	3		1																					
	1	1			2	1	2		2	3	3																								
	1				2	2																													
Grand total from all causes by sex.....	97	73	79	71	309	327	337	328	237	173	311	327	65	61	99	86	40	33	53	44	29	27	21	19	13	15	13	8				8			
Grand total from all causes by color.....	170	150			536	485			419	638			126	185	73	96							56	40		33					21				
Percentage from all causes by color in each period of life to total mortality.....	4.11	2.68			12.96	11.24			2.91	15.43			3.05	4.47	1.76	2.33						1.35	0.97		0.80					0.51					
Rate of death per 1,000 inhabitants (white and colored).....	1.40	2.43			4.42	7.53			2.38	10.33			1.04	2.90	0.60	1.56						0.46	0.65		0.27					0.24					
Death-rate per 1,000 inhabitants (total).....	0.98	0.83			2.28	2.54			2.24	2.43			0.69	1.01	0.40	0.53						0.31	0.23		0.18					0.11					

TABLE I.—DEATHS.—SHOWING TOTAL NUMBER OF DEATHS OCCURRING IN THE DISTRICT OF COLUMBIA, ARRANGED BY CLASSES AND ORDERS, SEX AND COLOR, MONTHS AND QUARTERS, WITH PERCENTAGES AND DEATH-RATES, FOR THE YEAR ENDING JUNE 30, 1881.

Cause of death.	SOCIAL RELATIONS.						NATIVITY.											
	Widow or widower.			Unknown.			District of Columbia.				Other parts of United States.				Foreign.			
	C.			W.			W.		C.		W.		C.		W.		C.	
	M.	F.	M. F.	M.	F.	M. F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
V. RECAPITULATION.	2	6	1	1	2		17	11	20	17	13	8	11	3	11	4		
	Accidents and negligence.....						1	1	4	8	1	1	1	1	2	1		
	Homicide.....						1	2			2	2			4	2		
	Suicide.....						1						3					
	Judicial hanging.....																	
Grand total from all causes by sex	99	222	51	146	15	1	539	497	571	594	383	354	346	416	275	175	2	2
Grand total from all causes by color	321		197	16		8	1,036		1,165		717		762		450		2	2
Percentage from all causes by color in each } period of life to total mortality	7.76		4.76	0.39		0.19	25.05		23.17		17.83		18.43		10.88		0.05	.05
Rate of death per 1,000 inhabitants (white and } colored).....	2.85		2.19	0.13		0.13	8.541		18.851		6.911		12.380		3.710		0.032	0.032
Death-rate per 1,000 inhabitants (total)	1.76		1.06	0.09		0.04	5.66		6.36		3.91		4.16		2.46		0.01	0.01

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Diseases.	Georgetown.		Washington.										County.		Totals.				Grand total.		
	1st di- vision.	2d di- vision.	4th di- vision.	5th di- vision.	6th di- vision.	7th di- vision.	8th di- vision.	9th di- vision.	10th di- vision.	County.		Hospitals and other public institutions.		W.	C.						
										West of High street.	East of High street.	South of K. west of 15th avenue northwest.	North of K. west of Vermont avenue northwest.			North of Massachusetts av- enue, east of Vermont av- enue, west of 1st west, northwest.	North of B south, east of 15th, south of Massachu- setts avenue, west of 1st west, northwest.	South of B south, west of 1st west and Delaware avenue southwest.		East of Delaware avenue, south of B southeast.	North of B southeast, east of 1st west, south of Mary- land avenue northeast.	East of 1st west, north of Maryland avenue north- east.	West of Eastern Branch.	East of Eastern Branch.
Phthisis pulmonalis.....	8	12	12	19	53	37	43	26	17	22	32	45	18	12	12	6	17	868	892	760	
Pneumonia.....	2	4	1	6	32	18	34	12	8	14	14	17	9	6	12	2	13	134	194	828	
Cholera infantum.....	8	2	1	1	6	8	7	12	4	8	6	6	2	1	4	1	1	60	54	114	
Scarlet fever.....	6	7	3	4	4	1	1	1	1	6	...	5	5	2	1	1	2	25	1	26	
Diphtheria.....	1	1	2	5	2	15	2	5	5	5	2	10	3	2	2	1	1	106	18	124	
Typhoid fever.....	2	1	1	2	2	9	7	10	4	17	6	11	8	2	4	3	6	44	23	67	
Malarial fevers.....	2	1	5	3	2	8	7	3	2	5	9	8	3	9	1	7	23	53	72	180	
Diarrhœal diseases.....	46	20	47	110	153	185	131	138	74	55	96	111	47	65	57	16	42	68	85	153	
All other diseases.....	65	37	72	280	270	318	227	254	133	108	164	213	83	94	104	28	84	1,842	1,092	2,434	
Totals.....	2 86	1 92	2 263	625	625	715	597	597	597	744	868	1,000	1,000	1,000	1,000	1,000	1,000	2,805	1,981	4,136	
Percentage to total deaths, by color.....	46	23	46	89	89	106	275	223	176	88	159	236	75	85	82	34	53	74	130	2,014	1,681
Births.....	2 28	1 45	2 28	79	4 55	5 63	9 14	13 65	14 74	5 57	8 68	11 23	4 74	4 23	5 19	1 00	2 25	3 67	3 22
Percentage to total births, by color.....

100-100

TABLE III.—DEATHS.—Deaths under one year of age, arranged monthly, year ending June 30, 1881.

	1 day and under.	1 day to 1 week.	1 week to 1 month.	1 to 2 months.	2 to 3 months.	3 to 4 months.	4 to 5 months.	5 to 6 months.	6 to 7 months.	7 to 8 months.	8 to 9 months.	9 to 10 months.	10 to 11 months.	11 to 12 months.	Total.	Total by color.	Percentage to total mortality under 1 year of age by color.
July, 1880:																	
White males.....	4	2	2	2	6	4	4	2	2	2	4		1	3	38		
White females.....	1	1	7	2	3	1	2	2	6	2	5		4	1	36		18.18
Colored males.....	1	3	6	3	3	3	2	4	3	1	4		4	3	36		18.18
Colored females.....	2	5	7	1	3	3	6	5	3	2	3		5	3	47		12.09
Total.....	9	10	22	5	12	11	14	13	13	7	16	6	12	7	157		15.08
August, 1880:																	
White males.....	2	3	3	3	3	1	2	1	1		1		2	1	22		
White females.....	1	6	3	3	2	2	1	1	1	1	1		1	1	16		9.34
Colored males.....	1	5	4	2	2	2	3	2	4	1	3		2	1	27		9.34
Colored females.....	4	1	9	1	2	2	9	2	2	2	2		4	2	36		9.34
Total.....	8	15	16	9	7	5	5	4	7	4	7	6	4	4	101		9.70
September, 1880:																	
White males.....	1	1	1	4	2		1	1	1				1	1	12		
White females.....	1	3	7	1	3	2	3	2	3		2		2	2	15		6.43
Colored males.....	2	4	5	3	5	2	3	3	3		2		3	1	38		10.57
Colored females.....	3	4	5	4	2	2	2	3	3	1	3		2	2	29		10.57
Total.....	7	9	16	12	11	6	7	3	5	1	2	6	6	3	94		9.03
October, 1880:																	
White males.....	3	2	4	1	3	1	1	1	1				1	2	20		
White females.....	1	1	1	1	1	1	1	1	1	2					8		6.88
Colored males.....	5	2	4	4	5	1	2	1	1	1	2		1	1	28		8.20
Colored females.....	1	2	6	3	4	3	2			3	4		3	3	24		8.20
Total.....	10	7	15	8	13	3	4	2	1	6	3	4	1	3	80		7.68
November, 1880:																	
White males.....	4	1	2		1	2	2	1	1						15		
White females.....	1	1	2							1					5		4.91

TABLE III.—DEATHS.—Deaths under one year of age, arranged monthly, year ending June 30, 1891—Continued.

	1 day and under.	1 day to 1 week.	1 week to 1 month.	1 to 2 months.	2 to 3 months.	3 to 4 months.	4 to 5 months.	5 to 6 months.	6 to 7 months.	7 to 8 months.	8 to 9 months.	9 to 10 months.	10 to 11 months.	11 to 12 months.	Total.	Total by color.	Percentage to total mortality under 1 year of age by color.
November, 1890—Continued.																	
Colored males	2	1	4	2	1		2	2		1	1	1	1	2	19		6.62
females	2	4	6	2			2	1	1	1	2	1	1		23	42	6.62
Total	9	7	14	4	2		6	4	2	3	3	3	1	2	62		5.96
December, 1890:																	
White males	2	2		3	1	1	2		3	2					16		6.43
females	2	1		3					1					1	9	25	6.43
Colored males	2	3	5	1	1	2	3	1	1	3	2	1	1	2	30		7.41
females	2	1	7	1	4	2	3	1	1						27	47	7.41
Total	8	7	13	8	5	3	7	1	5	5	2	1	1	6	72		6.92
January, 1891:																	
White males	1	2	3	3	2										11		7.13
females	5	1	1	5		1		1	1	2				1	18	29	7.13
Colored males	3	3	2	1	1	1	2	1	2	1	1	2		2	15		5.52
females	2	3	4	1		1	2	1	2	1					20	35	5.52
Total	11	9	10	10	2	3	2	2	3	5	2	2		3	64		6.15
February, 1891:																	
White males	1	6	1	2		1	1	1		1	1	5			20		7.86
females	1	1		1	1	1	1	3	1			1	1	2	12	32	7.86
Colored males	3	5	5	2	2	3	1	2	2	1	1	1	2		19		8.36
females	5	5	6	8	1	4	1	5	2						34	53	8.36
Total	10	12	8	8	2	8	4	11	4	4	2	7	3	2	85		8.17
March, 1891:																	
White males	1		1	1	2	1	2	2	1						14		7.13
females	5	4	3	1		1									15	29	7.13
Colored males	3	4	4	5	1	1	1	1	3	2	1	2	1	1	25		8.04
females	2	2	1	5	1	1	1		3	4	3	1	2		26	51	8.04
Total	11	10	9	7	3	4	4	2	7	6	7	5	4	1	80		7.66

April, 1881.									
White males	3	1	2	4	1	2	1	1	14
Colored males	2	1	3	1	2	3	1	1	28
Colored females	2	3	2	1	7	1	2	2	28
Total	10	10	8	5	12	1	2	3	75
May, 1881.									
White males	3	2	1	2	2	1	1	2	14
Colored males	1	3	3	1	2	3	1	2	6
Colored females	3	1	1	2	1	1	1	1	24
Total	7	6	5	2	6	1	1	6	56
June, 1881.									
White males	1	3	2	4	4	3	2	6	39
Colored males	1	1	2	1	1	2	1	2	18
Colored females	3	4	4	3	3	4	2	3	32
Total	5	9	10	7	10	9	6	12	91
Grand total.									
Per cent. to total mortality under 1 year	10.09	10.66	14.03	8.17	7.49	6.44	5.38	6.34	1.041
Total white males									
Per cent. to total mortality under 1 year	26	24	22	21	30	15	18	14	235
Total white females									
Per cent. to total mortality under 1 year	22	17	21	18	8	9	9	12	172
Total colored males									
Per cent. to total mortality under 1 year	12.79	9.88	12.21	10.46	4.65	5.23	5.23	6.94	5.23
Total colored females									
Per cent. to total mortality under 1 year	31	37	48	22	17	19	18	18	309
Total colored males									
Per cent. to total mortality under 1 year	10.03	11.98	15.53	7.12	5.50	6.15	5.82	5.82	4.85
Total colored females									
Per cent. to total mortality under 1 year	26	33	55	24	23	24	23	18	325
Total colored males									
Per cent. to total mortality under 1 year	8.00	10.15	16.92	7.38	7.07	7.38	5.54	6.77	1.85

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TABLE IV.—DEATHS.—*Number of deaths of children under five years of age from the principal diseases of children, year ending June 30, 1881.*

Diseases.	White.		Colored.	
	Deaths.	Percentage to total mortality of whites under 5 years of age.	Deaths.	Percentage to total mortality of colored under 5 years of age.
Measles.....	6	.85	2	.32
Croup.....	52	7.44	23	2.35
Diphtheria.....	65	9.31	10	1.02
Scarlet fever.....	17	2.43		
Typhoid and malarial fevers.....	15	2.15	39	3.98
Diarrheal diseases, except cholera infantum.....	27	3.85	71	7.25
Whooping-cough.....	9	1.28	9	.92
Eranition.....	37	5.30	55	5.61
Scrofula, tuberculosis, marasmus, and tabes.....	48	6.87	73	7.45
Hydrocephalus and tubercular meningitis.....				
Pneumonia.....	12	1.73	70	7.14
Acute diseases of brain.....	44	6.30	36	3.67
Convulsions.....	25	3.58	108	11.02
Tetanus.....	9	1.28	22	2.24
Pneumonia and congestion of lungs.....	32	4.50	80	8.27
Pneumonia.....	49	7.10	137	13.98
Diseases of digestive organs.....	36	5.19	44	4.49
Developmental diseases of children.....	103	14.75	97	9.91
Accidents and negligence.....	12	1.73	16	1.65
All others.....	100	14.30	78	7.97
Total.....	698	100.	980	100.
Percentage to total mortality by color.....		31.65		50.75
Annual death-rate by color.....		5.72		15.65

TABLE V.—DEATHS.—*Number dying, seventy years of age and over, year ending June 30, 1881.*

	White.		Colored.		Total.
	Male.	Female.	Male.	Female.	
70 years.....	16	11	7	16	30
71 years.....	5	10	3	3	21
72 years.....	12	6	3	4	25
73 years.....	9	9	2	4	25
74 years.....	6	18	2	3	29
75 years.....	12	6	6	10	34
76 years.....	8	8	2	5	23
77 years.....	10	5	3	1	19
78 years.....	4	7	6	3	20
79 years.....	2	11	4	1	18
80 years.....	6	4	15	15	40
81 years.....	3	2	1	2	8
82 years.....	2	5			7
83 years.....	2	5	1	2	10
84 years.....	2	5	1	2	10
85 years.....	3	6	4	7	20
86 years.....	2	6		1	9
87 years.....	2	1			3
88 years.....	1	1	3	4	9
89 years.....	2	2	1		5
90 years.....	3	5	2	6	16
91 years.....		1			1
92 years.....		2		2	4
93 years.....		1	1	2	4
94 years.....				1	1
95 years.....		1	1	2	4
96 years.....				1	1
97 years.....		1			1
98 years.....				1	1
99 years.....			1		1
100 years and over.....				6	6
Total.....	112	139	71	104	326

TABLE VI.—DEATHS.—Average ages in years of decedents dying from eighteen different diseases, and from suicide, during the year ending June 30, 1881.

	White.		Colored.	
	Males.	Females.	Males.	Females.
Phthisis pulmonalis	38	36	27	28
Typhoid fever	32	25	17	22
Apoplexy	58	58	58	58
Insanity	48	51	53	53
Softening of the brain	62	38	52	52
Paralysis	56	69	61	59
Cancer	61	54	55	55
Epilepsy	49	29	34	34
Disease of heart	56	52	44	44
Bright's disease	49	48	36	36
Rheumatism	48	41	32	32
Aneurisms	37	35	39	39
Angina pectoris	63	67		
Gastritis	51	53	60	60
Cirrhosis of liver	61	71	30	30
Dropsies	38	52	35	35
Diabetes	56	62		
Hernia	59	53		
Suicides	48	42		

TABLE VII.—DEATHS.—Number of deaths occurring in the hospitals and similar institutions during the year ending June 30, 1881.

Hospitals.	White.		Colored.		Total.
	Males.	Females.	Males.	Females.	
Freedmen's Hospital	17	3	87	50	157
Providence Hospital	52	19	4	6	81
Government Insane Asylum	60	12	7	4	83
Washington Asylum Hospital	13	14	33	30	80
St. Ann's Infant Asylum	36	19	7	14	76
Children's Hospital	3	6	7	4	20
Home for the Aged	5	8			13
Small-pox Hospital	1				1
Naval Hospital	4				4
United States Jail			2		2
Columbia Hospital	3	2		2	7
Protestant Orphan Asylum	1				1
United States Arsenal	5	1			6
Notre Dame		1			1
Convent of the Visitation		1			1
Women's Christian Association		2		1	3
Barnes Hospital (Soldiers' Home)	37				37
Deaf and Dumb Asylum		1			1
Reform School		2			2
St. Vincent's		1			1
Orphans' Home				1	1
Total	237	92	147	113	589

TABLE VIII.—DEATHS.—Deaths and average ages, &c.—Continued.

COLORED MALES.

		All ages.				5 years of age and over.				20 years of age and over.				40 years of age and over.					
		Total deaths.			Average ages.			Total deaths.			Average ages.			Total deaths.			Average ages.		
		Total deaths.	Years.	Months.	Days.	Total deaths.	Years.	Months.	Days.	Total deaths.	Years.	Months.	Days.	Total deaths.	Years.	Months.	Days.		
1880.		81	18	7	15	30	49	10	26	54	9	5	20	61	11	21	21		
July	.....	77	18	4	18	33	41	8	15	25	51	9	18	17	61	8	16	
August	.....	87	15	2	16	33	38	8	3	26	45	3	13	16	55	9	22	
September	.....	84	20	7	6	39	43	3	25	52	50	8	10	21	60	10	27	
October	.....	59	21	3	29	39	41	20	21	51	9	4	12	70	5	10	10	
November	.....	59	17	5	.....	27	33	2	5	19	48	6	28	13	55	7	12
December	.....																	
1881.		62	27	7	15	34	49	4	2	31	41	4	22	20	67	1	3		
January	.....	79	22	.....	12	43	39	6	1	32	47	10	25	19	62	5	.....	
February	.....	96	18	9	29	40	43	9	27	39	44	4	9	23	53	1	19	
March	.....	90	18	5	26	43	37	4	8	37	42	.....	4	17	57	3	19
April	.....	68	25	5	11	38	45	1	13	32	51	7	15	20	65	3	24	
May	.....	79	15	11	20	34	36	1	15	27	41	7	24	12	61	5	.....	
June	.....																	
Total		921	19	8	27	424	41	9	23	347	48	5	8	210	61	2	12		

COLORED FEMALES.

1880.																	
July	88	11	5	21	29	36	11	18	24	41	4	29	11	61	...	...	...
August	94	17	6	25	43	37	5	21	33	44	9	7	15	65	7	7	7
September	81	20	7	6	40	40	11	17	36	44	2	5	14	66	8	17	17
October	92	26	7	25	58	41	10	7	52	45	2	29	27	61	...	26	26
November	75	21	9	10	39	41	2	...	32	47	6	1	18	62	8	27	27
December	70	25	2	27	34	51	2	3	33	52	5	15	22	65	...	15	15
1881.																	
January	76	25	11	1	45	43	1	10	38	48	11	18	20	69	4	18	18
February	107	23	7	10	56	44	3	26	47	50	10	21	26	69	...	25	25
March	89	23	5	1	47	43	3	29	42	47	5	1	21	66	2	26	26
April	104	24	3	22	64	38	8	23	54	43	8	14	26	61	...	19	19
May	53	27	9	23	31	46	8	23	27	51	8	26	16	66	8	3	3
June	71	20	7	24	39	37	...	2	30	45	1	3	15	63	1	26	26
Total	1,010	22	1	15	525	41	9	4	448	46	11	18	231	64	11	27	27

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TABLE IX.—Cemeteries, and number of decedents buried in each, year ending June 30, 1891.

Cemeteries.	White.	Colored.	Total.	Still-births.		
				White.	Colored.	Total.
Oak Hill.....	190		190	9		9
Congressional.....	393	2	395	23		23
Mount Olivet.....	515	170	685	26	3	29
Glenwood.....	251		251	17		17
Prospect Hill.....	116		116	6		6
Holyrood.....	85	20	105	8	3	11
Rock Creek.....	72	2	74	6		6
Saint Mary's.....	40		40	1		1
Graceland.....	49	104	153	8	5	13
Methodist.....	18		18	4		4
Presbyterian.....	46		46	1		1
Mount Pleasant, or Young Men's.....	2	350	352	1	28	29
Beckett's.....	1	263	264	1	36	37
Harmony.....	3	276	279	1	7	8
Baptist.....		16	16			
Mount Zion.....		109	109		8	8
Washington Hebrew.....	16		16			
Jones's Chapel.....		7	7			
Good Hope Hill.....		4	4			
Macedonian.....		4	4			
Payne's.....	1	112	113		11	11
Brightwood.....		7	7			
Moore's.....		28	28		4	4
Hilldale.....		15	15		2	2
Skaggs's.....	1	5	6			
Tennallytown.....	8	3	11	1		1
Soldier's Home grounds.....	38		38			
Insane Hospital grounds.....	45	10	55			
Private grounds.....	3	21	24	4	1	5
Georgetown Convent grounds.....	1		1			
Georgetown College.....	2		2			
Queen Chapel.....	1		1			
Industrial Home.....	1		1			
Potter's Field.....	58	347	405	18	115	133
Outside the District.....	249	36	285	7	2	9
Color unknown, Potter's Field.....						267
Total.....	2,205	1,931	4,136	142	225	370

TABLE X.—Occupations of fathers of children born of grooms, and of decedents, year ending June 30, 1881.

Occupations.	Fathers.		Grooms.		Decedents.			
	White.	Colored.	White.	Colored.	White.		Colored.	
					Male.	Female.	Male.	Female.
Auctioneers	2							
Actuaries					2			
Artists	6		3					
Attorneys and agents	48		18		21			
Architects	5		1		2			
Anatomists					1			
Astronomers	2							
Attachés of foreign embassies	1							
Brakemen			2		1			
Booksellers	2				1			
Bankers	4				3			
Builders	3				3			
Barbers and hair dressers	8		23		1		5	1
Blacksmiths	13		4	1	10		3	
Bookbinders	13				1			
Bookkeepers	4				4			
Butchers	33	1	6	2	11			
Boatmen	6		3					
Bakers	17		5		5		1	
Bar-tenders	6		1		2		2	
Bell-hangers			1					
Brewers	1		1		5			
Broom-makers	1							
Brick-makers	5		2				1	
Baggage-masters	1							
Brush-makers	1							
Brass-founders	1							
Boiler-makers	4		1					
Boat-builders					1			
Boatmen					1			
Bricklayers					6			
Carpenters	73	7	9	1	20			
Carriage-makers	9		2					
Cabinet-makers	11				5			
Clerks	813	6			67	12		
Contractors	8	1			8			
Captains of steamers	1				1			
Collectors	6				1			
Cigar-makers	12				2			
Cooks	5	9			4	3	3	30
Clergymen	7	7	3		8		2	
Coachmen		37	4	3				
Conductors	8		1					
Coffee-roasters	1							
Coppersmiths	4				1			
Civil engineers	2		4					
Confectioners	8	1			1			
Coopers	2							
Cattle drivers					1			
Canvasers	1	1			2			
Dressmakers						4		4
Drivers	35	13		4	10		5	
Druggists	11		2		3			
Draughtsmen	2		1		6			
Dealers in ice	3		1		1			
Dyers	2		1					
Dairymen	5		2		2			
Dentists			3			1		
Distillers					1			
Doorkeepers					1			
Engravers	9	1	1		1			
Examiners of patents	3							
Engineers	13		6		6			
Editors and publishers					6			
Expressmen					1			
Feed dealers	1							
Felers		1						
Florists	4				1			
Fruit dealers	4							
Finishers	3				1			
Farmers	22	9	46	6	22			

TABLE X.—Occupations of fathers of children born, &c.—Continued.

Occupations.	Fathers.		Grooms.		Decedents.			
					White.		Colored.	
	White.	Colored.	White.	Colored.	Male.	Female.	Male.	Female.
Firemen	12	2		1	3			
Fishermen	2		4	1	2			
Flour inspectors					1			
Gardeners	11	4	6		12			
Grocers	41		1		5		1	
Gamblers	1							
Gilders	1		1					
Gas-fitters					2			
Gunners					1			
Hucksters	6	5	5		3		1	
Health inspectors	2							
Harness-makers	4				1			
Hotel keepers	2		1					
Hostlers		10	2	1				
Horse-dealers	3							
Hatters	1		1		1			
Hospital stewards					4			
Hackmen					1			
House-roofers					1			
Instrument-makers					1			
Inventors	1							
Journalists	8		4	1	1			
Jewelers	9				3			
Junk dealers	1							
Jail guards	1							
Lumber dealers	2							
Laborers	152	594			71		211	
Livery-stable keepers	4		1					
Lamp-lighters	1		1					
Locksmiths	1							
Letter-carriers	6		1					
Leather dealers	1							
Lithographers	1		1					
Laundresses						1		19
Market-masters					1			
Merchants	114		12			25		
Mechanics	16		1		2			
Messengers	15	31	1	2	6			
Machinists	16		5		5			
Molders	8		1		1			
Musicians	14	2	2		7	1	1	
Masons	1		1					
Marble-workers	1		1					
Mail agents	1							
Mattress-makers	2							
Members of Congress	1							
Millers	2		4	1	1			
Miners			1		1			
Midwives						2		
Matrons						1		
Manufacturers					1			
Nurses	1	2			2			
Notaries public					1			
Opticians	1							
Officers, United States Navy	11				3			
Officers, United States Army	2		1		4			
Oyster dealers	3		1		1			
Organ-makers					1			
Plumbers	29				1			
Peddlers	1							
Painters	47	4	11	2	22			
Printers	87	16			15			
Produce dealers	14							
Plasterers	25	2	1		6			
Physicians	7		6		15			
Policemen	20	1	1		2			
Pavers	3		2					
Porters		23		6			2	
Phonographers	1							
Pilots	1		1					
Photographers	3		1		2			
Paper-hangers	5		1					

TABLE X.—Occupations of fathers of children born, &c.—Continued.

Occupations.	Fathers.		Grooms.		Decedents.			
	White.	Colored.	White.	Colored.	White.		Colored.	
					Male.	Female.	Male.	Female.
Firemen	1							
Paper-makers	1		1					
President Navigation Company	1				1			
Pattern-makers	2		1		1			
Piano-makers					2			
Restaurant keepers	13		2		9		1	
Religieuses						2		
Rag-dealers		7		1				
Riggers	1				1			
Registers, Land Office			1					
Reporters					1			
Soap-makers		2	1	1				
Soldiers	13		2		87			
Shoemakers	16	15	5	1	5		3	
Servants	4	50	50	34	12	16	15	133
Sawyers				1				
Students					2			
Stone-cutters	11			1	9		1	
Signal Service	3				1			
Stevardores	1	1		2				
Sailors	10	7		1	9		3	
Slaters	1							
Saddlers	2							
Superintendents, railroad	2							
Salesmen	2							
Stenographers	5			1				
Sextons	1	3			1			
Surgeons, United States Army					2			
Seamstresses						9		6
Superintendents gas works								
Tailors	19	1		4	1			
Tinners	17				7			
Teachers	4	1	2	1	3			
Telegraphers	8		2		1	1	2	1
Tobaccoists	4							
Topographers			1					
Turners					1			
Undertakers	5	2	1				1	
Umbrella-makers					1			
Upholsterers	2	1			1			
Veterinary surgeons	1							
Watchmen	14	2		1	9			
Wood and coal dealers	7							
White-washers		1						
Wheelwrights	1		1	1	3			
Washers and ironers								6
Wood turners					1			
Wood sawyers							1	

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TABLE XI.—Showing daily mortality, divided under 19 heads, classified by color, different
JULY, 1880.
All deaths by violence

Day of month.	Mortality.																			Meteorological conditions.						
																				Barometrical.						
	Deaths of whites.	Deaths of colored.	Total deaths.	Diarrhoeal diseases, 5 years of age and over.	Diarrhoeal and intestinal diseases, inanition, and marasmus, under 5 years of age.	Malarial fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Croup.	Whooping-cough.	Phthisis pulmonalis.	Acute diseases of respiratory organs.	Diseases of the nervous system.	Diseases of the heart.	Cancer.	60 years of age and over.	Under 5 years of age.	Children 7 days old and under.	Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of barometer from 7 a. m. to 9 p. m.	Total fall of barometer from 7 a. m. to 9 p. m.	Total rise and fall of barometer for 24 hours.	Result of total movements of barometer for 24 hours.	
1	5	9	14	1	4	1	1				1	1	2	2	2	3	8	1		30.03	+	.01	.15	.16	.16	
2	3	6	9	1	1	1					1	1	2			1	6	1		29.82	+	.10	.03	.09	.22	
3	12	4	16	1	6	1					3	1	2			1	9	1		29.94	+	.08	.10	.18	.18	
4	9	4	13		4	1					1	2	2			1	2	7		30.07	+	.10	.03	.13	.07	
5	4	3	7		2	2					1					3	3			29.91	+	.05	.15	.20	.20	
6	8	5	13	2	2	1				1						3	4			29.95	+	.06	.06	.12	.12	
7	8	4	12		1	1					1	3	2			3	7	2		30.08	+	.08	.05	.13	.13	
8	6	11	17		6	1					4	2	3				12	1		30.11	+	.06	.01	.14	.0	
9	9	8	17	1		1					1	3	1				10			30.01	+	.02	.11	.13	.13	
10	8	6	14		3						1	2	1			1	11	1		29.94	+	.0	.04	.04	.04	
11	6	7	13	1	4						1	3	1			1	8			30.00	+	.05	.03	.08	.08	
12	8	5	13		4						1	1	3			1	3	9		30.03	+	.06	.07	.13	.01	
13	6	4	10		2						1	2	1			1	6			29.90	+	.05	.04	.09	.10	
14	4	10	14	1							1	1	3			1	4	8		29.97	+	.01	.02	.04	.07	
15	8	7	15		2						3	2	3			3	8			29.84	+	.07	.09	.16	.16	
16	6	7	13		6						2	1	1			1	7	1		29.74	+	.06	.05	.16	.06	
17	4	6	10		3	1						1	1			1	8	2		29.88	+	.08	.11	.19	.19	
18	2	3	5	1							2	1	1			1	3	1		30.02	+	.08	.05	.16	.10	
19	5	6	11		3						2	1	3			1	6	1		29.97	+	.02	.13	.15	.11	
20	5	1	6		1						2		1			2	1			29.92	+	.04	.12	.19	.05	
21	7	6	13		5						1	1	1				11	2		30.11	+	.04	.04	.15	.15	
22	2	5	7		2	2					1	1	1				5			30.09	+	.02	.04	.10	.02	
23	6	7	13	1	1						3	1	2			1	5	4		30.13	+	.04	.02	.09	.03	
24	9	9	18		5					1	1	2	3			1	11	2		30.11	+	.0	.01	.04	.02	
25	9	9	18		2	1				2	5	1	2			1	2	5		30.05	+	.02	.06	.08	.06	
26	6	4	10		2	1				1		1	2			1	7			30.03	+	.02	.02	.08	.0	
27	4	5	9		2	1					1	1	1			1	7			30.04	+	.02	.03	.07	.01	
28	4	2	6		1						1	1	1			1	7			30.07	+	.05	.04	.09	.01	
29	1	4	5		1	1	1				1	1	1			1	2			30.03	+	.02	.01	.08	.02	
30	5	7	12		5	1					1	1	2			1	2	7		30.11	+	.07	.06	.16	.10	
31	3	3	6	1	2							1	1			1	4			30.19	+	.08	.01	.22	.08	
Totals and means.	182	177	359	11	94	7	8	3	2	3	7	43	28	50	15	6	47	205	19	80.07	+1.09	.44	.90	1.55	3.28	+1.28

diseases, and ages, also daily meteorological conditions and variations divided under 21 heads. are excluded.

JULY, 1880.

Meteorological conditions.

Thermometrical.															
Record of dry bulb.															
Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of thermometer from 7 a. m. to 9 p. m.	Total fall of thermometer from 7 a. m. to 9 p. m.	Total rise and fall of thermometer for 24 hours.	Result of total movements of thermometer for 24 hours.	Maximum temperature.	Minimum temperature.	Range of maximum and minimum temperatures.	Daily mean of wet bulb.	Daily mean percentage of humidity.	Resultant direction and force of wind per hour.	Mean force of wind per hour.	State of weather.	Daily rainfall in inches.	
73.0	-	3	12	16	-	7	86	67	19	68	74.7	NW. 1	2	Rainy	.31
75.0	+	1	14	8	23	7	86	66	20	68.5	70.3	W. 3	3	Fair	.04
72.9	-	10	15	7	32	2	82	64	18	62	53.3	N. 0	9	Fair	...
75.5	-	5	16	9	30	2	86	61.5	24.5	64	50	W. 1	4	Clear	...
76.9	-	2	7	3	12	2	82	68	14	72	75.7	S. 0	9	Cloudy	.18
78.0	-	5	12	6	23	1	85	71	14	70.5	70	NW. 5	4	Cloudy	...
80.0	-	4	12	6	22	2	88.5	71	17.5	70	58.3	NW. 4	4	Clear	...
80.5	-	6	16	11	33	5	91	71	20	71.5	64.3	S. 8	8	Fair	.03
83.0	-	6	14	3.5	28.5	4.5	95	71.5	23.5	74	66.7	SW. 3	3	Fair	.03
84.7	-	2.5	13	12	27.5	1.5	96	75	21	73.5	57	W. 7	7	Clear	...
81.2	-	4	13	12	29	3	94	75	19	72.3	59	NW. 6	6	Fair	(*)
83.5	-	2	14	10	26	2	93	71	22	75.5	70.3	SE. 2	5	Fair	...
86.5	-	3	18	12	32	4	98	76	22	74.5	57.3	NW. 8	9	Clear	...
82.0	-	2	10	15	27	7	94	77	17	75.3	65.8	SE. 2	5	Clear	.01
72.2	+	1	7	10	18	-	89.5	73.5	16	74.3	77.3	S. 6	7	Fair	.02
81.2	-	1	17	13	31	3	93	71.5	21.5	73.3	66.7	SW. 6	6	Fair	(*)
78.5	-	4	12	11	27	3	88.5	70	18.5	66.5	50	NW. 6	7	Clear	...
77.8	-	6	15	7	28	2	87	67	20	66.8	55	NW. 2	6	Fair	(*)
79.0	-	6	16	10	32	0	88.5	67	21.5	71.5	67.7	SE. 8	8	Fair	...
74.7	-	3	11	17	31	9	86	69	17	70	77	S. 4	6	Fair	.23
72.0	-	2	10	5	17	3	79	66	13	64.5	65	W. 2	2	Cloudy	...
64.5	-	5	1	4	10	8	72	62	10	62	85.7	N. 6	6	Rainy	1.40
71.0	0	0	14	7	21	7	79	61	18	66	75.8	S. 2	2	Cloudy	...
76.7	-	0	13	8	21	5	87	66.5	20.5	69.5	68.8	S. 1	1	Fair	...
76.3	-	5	13	9	27	1	85	68	17	70	71	NE. 1	1	Fair	...
80.7	-	2	17	10	29	5	92	68	24	70.3	59.7	W. 2	4	Clear	...
76.5	-	6	10	10	26	6	87	69	18	69.5	66.7	N. 3	4	Clear	(*)
72.6	-	4	8.5	7.5	20	3	80	65	15	65	63	NE. 5	5	Fair	...
72.0	-	5	12	6	23	1	80	59.5	20.5	63.5	59.7	NW. 4	5	Fair	...
72.0	-	7	14	7	28	0	82.5	60	22.5	62.3	54.7	N. 2	4	Clear	...
75.7	-	4	15	7	26	4	86	63	23	67.5	63	S. 5	7	Fair	...
77.2	+	2	391.5	279	786	+54.5	87	68.1	18.9	71.5	65.1	NW.	5.52	...	2.25
-113.5	-				-53.5			68.1	18.9	71.5	65.1				

526 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

TABLE XI.—Showing daily mortality, divided under 19 heads,

AUGUST, 1880.

Day of month.	Mortality.																			Meteorological conditions.						
	Deaths of whites.	Deaths of colored.	Total deaths.	Diarrheal diseases, 5 years of age and over.	Diarrheal and intestinal diseases, inanition, and marasmus, under 5 years of age.	Malarial fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Croup.	Whooping-cough.	Pneumonia.	Acute diseases of respiratory organs.	Diseases of the nervous system.	Diseases of the heart.	Cancer.	60 years of age and over.	Under 5 years of age.	Children 7 days old and under.	Barometrical.						
																				Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of barometer from 7 a. m. to 9 p. m.	Total fall of barometer from 7 a. m. to 9 p. m.	Total rise and fall of barometer for 24 hours.	Result of total movements of barometer for 24 hours.	
1.....	11	5	16			3	2	1				4		3		1	10	1	30.12	+	.01		.12	.13	-.11	
2.....	2	6	8									2	1	4		1	3	2	29.93	-	.07	.01	.12	.20	-.18	
3.....	6	7	13			8						4		2		1	3	4	29.96	+	.03	.07	.01	.11	+.09	
4.....	6	5	11			1	1	1				2	1	1			4	1	30.04		0	.10		.10	+.10	
5.....	5	5	10	1								3	2	2	1		2	3	30.20	+	.09	.03		.12	+.12	
6.....	3	2	5			1						4	1	1	1		4	1	30.18	-	.03	.03	.02	.08	-.02	
7.....	8	11	19	1			1					4	2	3		1	10	1	30.22	+	.05	.03	.04	.12	+.04	
8.....	5	5	9	14				1				4	1	1	1		3	5	30.18	+	.01		.09	.10	-.08	
9.....	5	6	11			2			1			1	7		2		1	7	29.99	-	.07		.13	.20	-.20	
10.....	3	7	10			3				1		3				1	6	1	29.91		0	.03	.07	.10	-.04	
11.....	3	8	11	1								1	3	1	1		4	2	29.99	+	.07	.02		.09	+.09	
12.....	6	7	13			2		1				3	2	1	1		3	5	30.06	+	.04	.05	.01	.10	+.08	
13.....	4	5	9	1								3		1	1	1	2	1	30.05	+	.05		.12	.17	-.07	
14.....	3	5	8			1						1	5	1		1	1	5	30.29	-	.05	.01	.10	.16	-.14	
15.....	4	10	14			3		1	1			1	1	4		1	10	3	30.06	+	.09	.17		.26	+.26	
16.....	2	2	4									1	1		2		1	1	30.35	+	.19	.05		.24	+.24	
17.....	5	5	10	1		2						1	1			2	4		30.36	+	.05		.08	.13	-.03	
18.....	6	8	14	1				2	1	1		1				2	10	1	30.20	-	.06		.12	.18	-.18	
19.....	9	3	12			3	1					2	1			1	7		29.97	-	.07		.17	.24	-.24	
20.....	2	4	6			1						2				3	2	1	29.79	-	.09	.01	.07	.17	-.15	
21.....	7	3	10	1			1					1				1	5	2	29.80		0	.06		.06	+.06	
22.....	2	5	7			1						3	1	1		1	2		29.96	+	.12	.10	.06	.28	+.16	
23.....	3	1	4									1		1	1		2	2	30.11	+	.10	.03		.13	+.13	
24.....	4	10	14	1		4						1	1	2	2		2	9	30.07	+	.02		.09	.11	-.07	
25.....	4	3	7									1	1	1	1	1	4		30.00	-	.02	.10	.10	.22	-.02	
26.....	4	7	11			3	1					2	3		1	1	5		30.16	+	.13	.01		.14	+.14	
27.....	4	6	10			3		1				1	1	2		1	7	2	30.17	+	.05		.08	.13	-.03	
28.....	7	4	11			4						2	1	1		1	5		30.13	+	.05		.09	.14	-.04	
29.....	4	3	7			2						3				1	5		30.04	+	.01	.01	.09	.11	-.07	
30.....	4	5	9			4	1					2	1	1		1	7	1	30.07	+	.05	.07		.06	+.06	
31.....	4	3	7	1				1				1				1	2		30.15	+	.09		.04	.13	+.05	
Totals and means.	145	168	313	10	56	9	9	5	7	7	56	23	40	12	3	38	159	27	30.07	-	.46	.99	1.88	4.63	+1.62	
																									-1.67	

classified by color, different diseases, and ages, &c.—Continued.

AUGUST, 1880.

Meteorological conditions.

Thermometrical.															
Record of dry bulb.															
Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of thermometer from 7 a. m. to 9 p. m.	Total fall of thermometer from 7 a. m. to 9 p. m.	Total rise and fall of thermometer for 24 hours.	Result of total movements of thermometer for 24 hours.	Maximum temperature.	Minimum temperature.	Range of maximum and minimum temperature.	Daily mean of wet bulb.	Daily mean percentage of humidity.	Resultant direction and force of wind per hour.	Mean force of wind per hour.	State of weather.	Daily rainfall in inches.	Day of month.
78.5	—	4	16	9	29	88.5	67	21.5	70.8	63.7	S. 7	7	Clear.....		1
82.2	—	4	15	8	27	91	70	21	72.3	63	S. 8½	9	Fair.....	(*)	2
75.5	—	9	10	10	29	87	71	16	72	81.7	NE. 1½	2½	Thunder-storm. Cloudy.	1.01	3
71.7	—	0	3	7	10	77	67	10	69.5	88.7	W. 3½	6½	Rainy.....	.97	4
67.7	—	5	9	6	20	74	63	11	62	69.3	NE. 6	9½	Cloudy.....	.12	5
70.5	—	2	12	7	21	77	62	15	64	66.3	NE. 3½	5	Cloudy.....		6
74.0	—	4	16	8	28	83	63	20	66.3	66.3	N. 1½	2½	Clear.....		7
72.2	—	8	15	10	33	83	61	22	66.3	70.7	S. 4½	5	Clear.....		8
76.2	—	4	17	7	28	86	62.5	23.5	69.5	69.3	SE. 5½	6	Clear.....		9
77.5	—	5	15	14	34	88	70.5	17.5	71	74.7	S. 3	3½	Fair.....	.06	10
74.7	—	1	5	6	12	82	70	12	69.8	76.0	NW. 3½	4	Fair.....	(*)	11
74.7	+	3	13	10	26	85	66	19	66.8	64	N. 5	5½	Fair.....		12
74.7	—	7	17	8	32	85	62	23	63.5	52.3	NW. 4½	5	Clear.....		13
76.5	—	5	18	14	37	86	66	24	69.5	66.3	W. 4½	4½	Fair.....	.12	14
73.0	—	6	10	5	21	85	65	15	63.8	61.3	NW. 5½	5½	Fair.....	.18	15
68.7	—	10	11	5	26	78	59	17	59.5	54.7	E. 5½	6½	Clear.....		16
71.0	—	2	10	7	19	85	65	15	62	57.8	S. 4½	5	Fair.....		17
70.2	—	4	9	5	18	80	62	13	63.5	66.7	SE. 4½	5½	Cloudy.....	.05	18
76.5	+	3	8	5	16	84	69	15	71	73.7	S. 10	10	Cloudy.....	.19	19
79.0	—	5	14	5	24	88	67	21	74	76	SW. 3½	4	Fair.....	.01	20
81.5	—	1	8	7	16	90	73	17	74	68	NW. 3	3½	Fair.....		21
79.5	—	6	12	7	25	87	73	14	75	69	NE. 2	3	Fair.....	(*)	22
80.2	—	4	11	6	21	89	72	17	76	71.7	E. 4	5	Fair.....	(*)	23
82.0	—	3	14	11	28	92	73	19	75.3	71.3	S. 5	5½	Fair.....	(*)	24
79.2	—	4	17	19	40	95	72	23	74.5	78.7	S. 7½	6½	Fair.....	.65	25
68.7	—	7	5	4	16	74	66	8	64.3	78	NE. 7½	7½	Clear.....	.02	26
72.7	—	2	13	6	21	81	62	19	66.5	68.7	E. 3½	5	Clear.....		27
78.0	—	1	12	6	19	85.5	67	18.5	72.5	74.3	S. 5½	5½	Clear.....		28
79.2	—	1	13	15	29	83	72	21	74.3	75.7	S. 6	6	Fair.....	.02	29
73.0	—	8	12	16	31	83	70	15	70	83.7	NE. 7½	8	Fair.....	.25	30
67.7	—	4	5	.....	9	69	63	6	69	93.0	NE. 4½	4½	Cloudy.....		31
75.1	+ 4 —123	365	253	745	+44 —51	83.9	66.8	17.1	69.0	70.8	S.	5.46	.....	3.83	

TABLE XI.—Showing daily mortality, divided under 19 heads,

SEPTEMBER, 1880.

Day of month.	Mortality.																	Meteorological conditions.								
	Deaths of whites.	Deaths of colored.	Total deaths.	Diarrheal diseases, 5 years of age and over.	Diarrheal and intestinal diseases, infantile, and marasmus, under 5 years of age.	Malarial fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Croup.	Whooping-cough.	Phthisis pulmonalis.	Acute diseases of respiratory organs.	Diseases of the nervous system.	Diseases of the heart.	Cancer.	90 years of age and over.	Under 5 years of age.	Children 7 days old and under.	Barometrical.						
																				Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of barometer from 7 a. m. to 9 p. m.	Total fall of barometer from 7 a. m. to 9 p. m.	Total rise and fall of barometer for 24 hours.	Result of total movements of barometer for 24 hours.	
1	4	6	10		1	1	1					4	1	1			2	3	30.17	+	.05	.01	.04	.10	.02	
2	7	4	11		1	4						1	1	1			3	5	30.12	+	.01		.08	.09	.07	
3	7	8	15		2	1	1					1	1	1			3	3	29.95	+	.03		.16	.19	.19	
4	8	8	16		2	2						1	1	1			5	5	29.90	+	.03	.02	.06	.11	.01	
5	8	4	12			1						1	1	1			4	1	29.96	+	.08	.01	.02	.11	.07	
6	7	3	10			1						2	1	1			2	5	29.94	+	.03	.02	.08	.13	.03	
7	10	5	15							2		6	3	3		1		4	29.94	+	0	.03	.03	.03	.03	
8	7	4	11			2	2		1	1		1	1	1		1		6	1	30.01	0	.08	.08	.08	.08	
9	4	3	7			1					1	1	1	1			1	2	30.03	0	.07	.06	.13	.01		
10	4	12	16			1	1		1	1		4	2	3			2	10	30.27	+	.16	.09	.26	.23	.25	
11	4	5	9			1					2	1	2	1			5	5	30.33	+	.10		.11	.21	.01	
12	4	1	5			1					1	1	1	1			4	3	30.18	0		.16	.16	.16		
13	6	8	14			1	1		1		2	2	3	2		1	4	6	29.93	+	.12	.06	.15	.33	.21	
14	5	3	8			1	2				1	1	1	3	1		0	5	30.03	+	.10	.05	.02	.17	.07	
15	8	6	14			2	1		4	1	1	1	1	1		1	2	8	2	30.01	+	.05		.12	.17	.07
16	2	5	7			1		1			1	2	1	1			1	2	30.04	+	.10		.07	.17	.03	
17	8	9	17			1	2				5	2	5	5			1	5	2	30.06	+	.07	.02	.04	.13	.05
18	7	11	18		1	4	4		1		1	2	2	2	1	1	1	9	1	30.13	+	.09	.02	.04	.15	.07
19	3	2	5			1	1				1	1	1	1			0	1	30.13	+	.04		.06	.10	.02	
20	5	9	14			2	2	1			2	1	1	1			1	6	1	30.05	0	.01	.10	.11	.08	
21	2	3	5	1							1	1	1	1			1	3	1	30.10	+	.09	.03	.05	.17	.07
22	7	5	12	1					1		2	1	2	1	1	5	4	4	30.22	+	.16	.02	.07	.25	.11	
23	6	6	12			2					2	1	1	1			2	8	30.33	+	.12		.12	.12	.12	
24	7	7	14			2			1		1	2	1	2	4		4	4	30.31	+	.01		.04	.05	.03	
25	10	6	16			2	3		3	1		2	2	2		1	2	9	1	30.20	+	.12		.15	.27	.27
26	5	5	10			2					3	3	3	3			2	3	30.08	+	.25		.11	.36	.14	
27	11	8	19			3	1		1		3	4	3	4			4	5	29.87	+	.18		.18	.36	.36	
28	3	4	7			1	1				1	1	4	1	1	1	3	3	29.81	+	.11	.18	.29	.07	.07	
29	11	4	15			4			2		1	1	2	3			3	6	29.98	+	.07	.12	.04	.23	.15	
30	7	6	13			3			1		3	1	1	1			3	6	30.26	+	.17	.12	.29	.29	.29	
Totals and means.	187	165	352	6	32	35	5	0	16	9	2	53	27	55	13	6	60	147	14	30.08	+1.68	.96	2.01	5.31	+1.56	
																					-.66				-1.56	

classified by color, different diseases, and ages, &c.—Continued.

SEPTEMBER, 1880.

Meteorological conditions.

Thermometrical.																	
Record of dry bulb.																	
Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of thermometer from 7 a. m. to 9 p. m.	Total fall of thermometer from 7 a. m. to 9 p. m.	Total rise and fall of thermometer for 24 hours.	Result of total movements of thermometer for 24 hours.	Maximum temperature.	Minimum temperature.	Range of maximum and minimum temperature.	Daily mean of wet bulb.	Daily mean percentage of humidity.	Reckoned direction and force of wind per hour.	Mean force of wind per hour.	State of weather.	Daily rainfall in inches.	Day of month.		
74.7	11	5	16	6	82.0	68.0	14.0	71.0	82.3	E.	4	4	Cloudy	.02	1	
77.1	11	8	21	1	86.0	70.0	16.0	72.3	77.0	S.	5	5	Fair	.....	2	
81.7	17	8	25	7	92.0	72.0	20.0	75.3	74.0	SW.	5	5	Fair	.....	3	
82.9	16	8	24	1	94.0	72.0	22.0	74.8	67.3	W.	2	3	Fair	.....	4	
82.5	12	7	25	1	91.0	75.0	16.0	74.5	67.0	NW.	3	3	Fair	.....	5	
79.5	12	15	32	8	90.0	70.0	20.0	71.5	69.0	NW.	8	8	Cloudy	.10	6	
69.5	2	4	11	7	74.0	67.0	7.0	65.8	85.0	NE.	4	4	Cloudy	1.26	7	
61.0	4	8	17	9	67.0	56.0	11.0	56.3	71.0	N.	10	10	Cloudy	.06	8	
55.5	4	3	11	3	58.0	53.0	5.0	53.5	87.3	N.	13	13	Rainy	1.48	9	
60.2	13	11	25	3	71.0	52.5	18.5	55.3	70.3	NW.	10	10	Fair	.....	10	
64.2	21	11	36	6	76.5	51.5	25.0	58.3	68.3	S.	13	13	Fair	.....	11	
67.2	19	8	34	4	78.0	56.0	22.0	61.3	71.0	S.	4	4	Fair	.....	12	
68.5	14	15	34	6	79.0	60.0	19.0	62.8	81.3	S.	5	5	Fair	.36	13	
58.5	10	8	25	5	66.0	52.5	13.5	52.8	64.0	N.	7	7	Fair	.....	14	
58.7	17	8	31	3	71.0	48.0	23.0	54.5	69.0	NW.	4	4	Fair	.....	15	
65.7	17	8	28	6	76.0	54.0	22.0	57.5	58.3	W.	3	3	Fair	.....	16	
72.5	24	9	40	8	86.0	55.0	31.0	65.0	65.7	W.	4	4	Fair	.....	17	
74.2	21	13	43	1	88.0	61.0	27.0	67.5	69.0	SW.	1	1	Fair	.....	18	
74.5	24	13	47	1	88.0	61.0	27.0	67.5	69.0	S.	1	1	Fair	.....	19	
78.2	19	6	34	4	88.0	64.0	24.0	69.5	71.7	S.	2	2	Fair	.....	20	
66.7	11	9	28	10	79.0	64.0	15.0	60.5	35.7	NW.	9	10	Fair	(*)	21	
61.7	15	13	39	9	73.0	53.5	19.5	55.3	61.7	NW.	4	4	Fair	.....	22	
60.0	8	6	16	0	67.0	54.5	12.5	54.3	64.3	NE.	2	2	Cloudy	(*)	23	
63.5	12	7	20	4	71.0	55.0	16.0	58.5	72.3	S.	1	1	Cloudy	.....	24	
67.7	23	9	39	7	81.0	54.0	27.0	63.3	70.3	S.	2	2	Fair	.....	25	
68.7	21	10	44	2	80.0	55.0	25.0	61.8	72.7	S.	1	1	Fair	.....	26	
74.2	11	4	15	7	82.0	67.0	15.0	70.0	80.3	SW.	4	4	Cloudy	.....	27	
61.5	4	7	24	16	73.0	55.0	18.0	56.3	70.7	W.	11	12	Fair	.15	28	
60.2	13	11	27	1	71.0	52.0	19.0	52.3	56.0	W.	4	4	Fair	.....	29	
53.0	10	11	28	8	62.0	46.0	16.0	44.8	45.7	NW.	8	8	Fair	.....	30	
68.1	+ 1	414	262	849	+ 67	78.0	50.1	13.9	62.1	68.9	S.	5.30	.....	3.42	.....	
.....	-172	13.8	8.7	28.3	- 96	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

34 D C

TABLE XI.—*Showing daily mortality, divided under 19 heads,*
OCTOBER, 1880.

Day of month.	Mortality.																			Meteorological conditions.						
	Deaths of whites.	Deaths of colored.	Total deaths.	Diarrhoeal diseases, 5 years of age and over.	Diarrhoeal and intestinal diseases, infantile, and marasmus, under 5 years of age.	Malarial fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Croup.	Whooping-cough.	Phthisis pulmonalis.	Acute diseases of respiratory organs.	Diseases of the nervous system.	Diseases of the heart.	Cancer.	60 years of age and over.	Under 5 years of age.	Children 7 days old and under.	Barometrical.						
																				Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of barometer from 7 a. m. to 9 p. m.	Total fall of barometer from 7 a. m. to 9 p. m.	Total rise and fall of barometer for 24 hours.	Result of total movements of barometer for 24 hours.	
1	9	4	13																		30.27	11				
2	5	8	13																		30.27	02				
3	5	7	12																		30.18	01				
4	9	6	15																		30.04	08				
5	9	5	14																		30.04	01				
6	4	3	7																		30.24	16				
7	9	8	17																		30.28	04				
8	10	6	16																		30.28	02				
9	5	8	13																		30.29	04				
10	5	8	13																		30.28	02				
11	11	2	13	1																	30.23	04				
12	4	7	11																		30.14	02				
13	4	8	12																		30.23	05				
14	5	2	7																		30.19	01				
15	4	7	11																		30.32	07				
16	6	10	16																		30.33	07				
17	9	4	13																		30.34	01				
18	7	4	11	1																	30.34	25				
19	3	4	7																		30.36	06				
20	3	7	10																		30.31	06				
21	4	6	10	1																	30.27	01				
22	5	5	10	1																	30.34	13				
23	6	2	8																		30.36	03				
24	8	3	11																		30.23	18				
25	5	3	8																		30.25	08				
26	7	8	15																		30.33	15				
27	2	6	8																		30.13	11				
28	7	5	12																		30.30	09				
29	5	6	11																		30.21	01				
30	3	8	11																		30.27	26				
31	2	7	9																		30.39	13				
Totals and means.	182	168	350	4	33	26	11	1	27	13	2	67	23	34	11	5	62	145	21	30.19	+1.00	1.53	2.86	7.16	+2.44	
																						-.67				-2.70

classified by color, different diseases, and ages, &c.—Continued.

OCTOBER, 1880.

Meteorological condition.

Thermometrical.																
Record of dry bulb.																
Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of thermometer from 7 a. m. to 9 p. m.	Total fall of thermometer from 7 a. m. to 9 p. m.	Total rise and fall of thermometer for 24 hours.	Result of total movements of thermometer for 24 hours.	Maximum temperature.	Minimum temperature.	Range of maximum and minimum temperature.	Daily mean of wet bulb.	Daily mean percentage of humidity.	Resultant direction and force of wind per hour.	Mean force of wind per hour.	State of weather.	Daily rainfall in inches.	Day of month.	
54.7	—	28	9	40	—	67.0	38.5	28.5	47.8	57.3	S.	2	2	Clear	—	1
59.9	—	28	11	43	—	72.0	43.0	29.0	52.5	64.7	S.	2	3	Clear	—	2
62.2	—	23	10	43	—	74.0	47.5	26.5	57.0	66.3	S.	4	4	Fair	—	3
62.2	—	17	13	32	—	80.0	57.0	23.0	63.8	76.0	S.	10	10	Fair	.28	4
59.5	—	6	2	18	—	64.0	55.0	9.0	57.3	68.3	N.	5	5	Cloudy	.48	5
61.9	—	14	11	29	—	78.0	54.5	23.5	53.0	60.7	NW.	4	6	Fair	—	6
51.5	—	16	13	43	—	65.0	44.0	21.0	48.0	62.3	N.	2	2	Clear	—	7
54.5	—	24	11	43	—	67.0	39.0	28.0	49.5	68.3	S.	2	2	Clear	—	8
53.7	—	17	10	31	—	70.0	47.5	22.5	54.5	75.3	NE.	4	4	Fair	—	9
62.5	—	26	14	48	—	78.0	48.0	30.0	57.8	73.7	SW.	1	2	Clear	—	10
63.7	—	25	10	44	—	80.0	50.5	29.5	60.8	71.0	S.	2	2	Clear	—	11
62.7	—	19	15	45	—	80.0	55.0	25.0	56.5	64.7	N.	4	4	Fair	(*)	12
54.2	—	17	11	42	—	65.0	45.5	19.5	44.8	44.3	N.	5	5	Clear	—	13
54.5	—	26	10	49	—	68.0	38.5	29.5	47.5	59.0	S.	3	4	Clear	—	14
63.7	—	22	11	35	—	80.5	50.0	30.5	60.2	67.0	S.	8	8	Clear	—	15
72.5	—	18	8	30	—	81.5	60.0	21.5	64.5	64.7	S.	13	14	Fair	(*)	16
63.7	—	15	23	—	23	70.0	46.0	24.0	52.8	90.0	SW.	2	4	Cloudy	.23	17
47.0	—	12	10	29	—	57.0	40.0	17.0	38.8	36.7	NW.	4	5	Clear	—	18
44.7	—	23	9	45	—	57.0	30.5	26.5	39.6	62.0	S.	13	2	Clear	—	19
50.9	—	16	8	28	—	60.0	41.0	19.0	45.8	70.0	SE.	1	4	Clear	—	20
54.7	—	19	7	32	—	64.0	42.5	21.5	51.4	78.7	S.	13	1	Cloudy	—	21
56.0	—	6	3	12	—	55.0	50.0	0.5	54.3	89.7	NE.	3	4	Cloudy	.07	22
43.9	—	4	8	19	—	55.0	44.0	11.0	41.3	51.0	NW.	12	13	Fair	.20	23
43.5	—	6	8	16	—	49.0	40.0	9.0	37.3	49.0	NW.	10	10	Snow	(*)	24
43.5	—	18	8	33	—	54.0	32.0	22.0	38.5	60.7	NW.	2	3	Clear	—	25
54.7	—	21	4	28	—	62.0	38.0	24.0	47.8	57.7	S.	7	7	Fair	.01	26
52.0	—	10	9	27	—	61.0	49.0	12.0	46.8	60.7	N.	5	7	Fair	.03	27
40.0	—	8	9	9	—	49.0	39.0	10.0	39.3	91.0	NE.	7	7	Rainy	.23	28
46.5	—	8	9	9	—	49.0	39.0	10.0	45.8	95.0	NE.	4	4	Cloudy	.03	29
61.0	—	8	14	—	14	63.0	48.0	15.0	60.3	96.0	NE.	2	5	Rainy	.65	30
50.7	—	1	10	19	—	58.0	45.0	13.0	44.5	56.7	NW.	14	14	Fair	—	31
55.5	+ 7	472	268	900	+106	65.6	45.1	20.5	50.2	67.9	S.	—	5.57	—	2.21	—
—213	—	—	—	—	—108	—	—	—	—	—	—	—	—	—	—	—

532 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

TABLE XI.—Showing daily mortality, divided under 19 heads,

NOVEMBER, 1880.

Day of month.	Mortality.																			Meteorological conditions.						
	Deaths of whites.	Deaths of colored.	Total deaths.	Diarrhoeal diseases, 5 years of age and over.	Diarrhoeal and intestinal diseases, insalubrious, and miasmata, under 5 years of age.	Malarial fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Croup.	Whooping-cough.	Phthisis pulmonalis.	Acute diseases of respiratory organs.	Diseases of the nervous system.	Diseases of the heart.	Cancer.	60 years of age and over.	Under 5 years of age.	Children 7 days old and under.	Barometrical.						
																				Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of barometer from 7 a. m. to 9 p. m.	Total fall of barometer from 7 a. m. to 9 p. m.	Total rise and fall of barometer for 24 hours.	Result of total movements of barometer for 24 hours.	
1.....	4	4	8						1	1		4	1				1	3	1	30.08	-.14	.05	.14	-.33	+.05	
2.....	5	5	10						2	2		3	1				1	3	1	30.23	-.13	.07	.01	.21	+.10	
3.....	6	6	12						3	3		3	2				2	3	2	30.30	-.08	.05	.04	.17	+.08	
4.....	6	7	13						3	4		3	2				2	3	2	30.39	-.05	.05	.10	.21	+.21	
5.....	6	8	14						4	5		4	3				3	4	3	30.41	-.02	.02	.08	.07	+.08	
6.....	6	9	15						4	6		4	4				4	5	4	30.42	-.02	.02	.08	.07	+.08	
7.....	6	9	15						4	6		4	4				4	5	4	30.43	-.02	.02	.08	.07	+.08	
8.....	6	9	15						4	6		4	4				4	5	4	30.44	-.02	.02	.08	.07	+.08	
9.....	6	9	15						4	6		4	4				4	5	4	30.45	-.02	.02	.08	.07	+.08	
10.....	6	9	15						4	6		4	4				4	5	4	30.46	-.02	.02	.08	.07	+.08	
11.....	6	9	15						4	6		4	4				4	5	4	30.47	-.02	.02	.08	.07	+.08	
12.....	6	9	15						4	6		4	4				4	5	4	30.48	-.02	.02	.08	.07	+.08	
13.....	6	9	15						4	6		4	4				4	5	4	30.49	-.02	.02	.08	.07	+.08	
14.....	8	5	13	1					1	1		2	1	1	1	1	1	1	1	30.22	-.07	.23	.23	.36	+.36	
15.....	8	5	13						4	1		1	2	2	1	1	1	1	1	29.95	.14	.04	.10	.36	+.44	
16.....	8	3	11						1	1		1	1	2	1	1	1	2	3	29.29	.20	.23	.19	.43	+.43	
17.....	4	4	8									1	4	1	1	1	1	3	3	30.40	-.09	.20	.19	.19	.01	
18.....	7	1	8									1	2	2	1	1	1	1	1	30.26	.17	.17	.02	.30	+.02	
19.....	3	3	6									2	1	1	1	2	2	1	1	30.33	-.11	.18	.18	.29	.07	
20.....	3	5	8						1	1		1	1	1	1	1	5	1	6	30.09	-.20	.19	.19	.57	+.19	
21.....	10	5	15									2	5	4	1	7	6	8	6	30.44	-.23	.16		.44	+.44	
22.....	3	10	13									1	2	4	1	2	4	4	4	30.68	-.24	.10	.10	.34	+.14	
23.....	6	11	17	1	1	1						5	2	2	1	1	9	9	9	30.73	-.06	.05	.08	.14	.06	
24.....	5	8	13									2	1	1		1	5	1	3	30.63	-.04	.23	.23	.21	.21	
25.....	4	6	10						1	1		3	1	1		1	6	1	6	30.34	-.14	.08	.08	.36	+.36	
26.....	8	2	10	2								8	2	2		1	2	1	2	30.43	-.13	.01	.04	.18	+.10	
27.....	4	3	7									1	2	2	1	2	2	1	2	30.45	-.04	.02	.02	.06	+.02	
28.....	4	4	8									5	1	2		2	1	2	1	30.15	-.13	.25	.25	.38	+.38	
29.....	6	1	7									1	1	2	1	1	4	1	4	30.16	-.05	.23		.27	+.17	
30.....	10	1	11									2	1	1		1	3	1	3	30.21	-.15		.15	.30	+.15	
Totals and means.	157	138	295	7	8	18	4	2	16	14	1	55	33	45	6	7	43	113	19	30.30	+2.58	1.85	2.07	7.70	+2.35	
																					-1.17				-2.71	

classified by color, different diseases, and ages, &c.—Continued.

NOVEMBER, 1890.

Meteorological conditions.

Thermometrical.															
Record of dry bulb.															
Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of thermometer from 7 a. m. to 9 p. m.	Total fall of thermometer from 7 a. m. to 9 p. m.	Total rise and fall of thermometer for 24 hours.	Result of total movements of thermometer for 24 hours.	Maximum temperature.	Minimum temperature.	Range of maximum and minimum temperature.	Daily mean of wet bulb.	Daily mean percentage of humidity.	Resultant directions and force of wind per hour.	Mean force of wind per hour.	State of weather.	Daily rainfall in inches.	Day of month.
42.9	—	21	9	41	+1	58.0	34.5	23.5	41.0	64.0	SW. 4	4	Clear	—	1
39.9	—	20	14	34	+1	63.0	39.0	24.0	44.0	57.3	S. 1½	2	Clear	—	2
37.7	—	20	5	34	+6	60.0	37.0	23.0	43.5	67.7	SE. 5	5½	Cloudy	(?)	3
39.9	—	9	—	11	+7	62.0	49.0	13.0	50.3	91.3	NE. 5	5	Cloudy	.62	4
39.9	—	7	4	12	+2	68.0	58.0	10.0	61.0	37.7	W. 2	2½	Cloudy	.06	5
44.4	—	7	8	41	+27	70.0	59.0	11.0	64.5	39.0	SE. 7	7	Cloudy	.16	6
43.9	—	21	9	38	+4	60.0	41.0	19.0	57.0	42.8	NW. 3½	10½	Clear	.07	7
43.9	—	19	13	37	+1	57.0	33.0	24.0	39.5	79.0	S. 1½	4	Clear	—	8
39.9	—	18	2	23	+13	62.0	38.0	23.0	44.0	96.0	S. 1½	1½	Clear	—	9
39.9	—	7	14	21	+7	67.0	50.0	17.0	52.3	65.7	SE. 6	7½	Cloudy	.43	10
39.9	—	12	11	27	+3	66.0	47.0	19.0	51.5	31.0	W. 7½	9	Clear	.15	11
37.9	—	6	15	—	—15	48.0	35.0	13.0	34.8	73.0	N. 5½	5½	Cloudy & snow.	.01	13
37.9	—	4	2	6	+2	40.0	34.0	6.0	43.5	71.7	NW. 3	3	Cloudy	.01	14
36.5	—	8	5	16	+2	42.0	32.0	10.0	33.0	66.0	NW. 1½	2½	Fair	—	15
39.7	—	21	10	40	+2	51.0	28.0	23.0	34.8	64.7	S. 2	2	Clear	—	16
43.9	—	14	9	35	+3	51.0	32.0	19.0	40.0	75.3	E. 1½	1½	Cloudy	—	17
35.0	—	6	15	25	+13	48.0	28.0	20.0	31.8	70.0	NW. 6	6	Cloudy	(?)	18
39.9	—	13	1	39	+3	33.0	19.0	14.0	26.0	62.0	W. 2	4½	Fair	—	19
33.2	—	2	—	2	+2	34.0	30.0	4.0	30.0	73.3	NW. 2½	4½	Sleet & rain.	.09	20
39.7	—	11	9	37	+5	39.5	28.0	11.5	28.3	72.3	W. 5½	7½	Clear	—	21
39.5	—	14	8	37	+9	23.0	12.5	10.5	18.3	68.7	NW. 5	5	Clear	—	22
22.5	—	14	6	23	+3	29.0	12.5	16.5	20.0	67.7	NW. 6	6	Clear	—	23
27.2	—	15	—	23	+8	31.0	13.0	18.0	25.8	83.7	S. 2½	3½	Cloudy	—	24
39.7	—	3	5	8	+2	36.0	28.0	8.0	29.3	82.7	NE. 3	3½	Cloudy & snow.	.04	25
34.7	—	3	5	—	—5	29.0	22.0	7.0	24.4	73.7	N. 4½	4½	Cloudy & snow.	.17	26
39.7	+	9	4	14	+6	36.0	22.0	14.0	28.3	82.0	NW. 2	2	Cloudy	—	27
32.7	+	3	—	4	+4	34.0	28.0	6.0	27.3	92.7	NE. 2	2	Rainy	.63	28
39.7	—	11	7	18	+4	45.0	32.5	12.5	35.8	77.0	NW. 4	4	Cloudy	—	29
33.7	—	6	2	14	+4	37.0	30.0	7.0	30.0	61.3	E. 2	2½	Cloudy	.04	30
40.7	+2 —1.02	321	179	664	+75 —93	48.4	32.9	15.5	37.7	70.5	N. W.	4.54		2.48	

534 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

TABLE XI.—*Showing daily mortality, divided under 19 heads,*

DECEMBER, 1892.

Day of month.	Mortality.																		Meteorological conditions.						
	Deaths of whites.	Deaths of colored.	Total deaths.	Diarrhoeal diseases, 5 years of age and over.	Diarrhoeal and intestinal diseases, infantism, and marasmus, under 5 years of age.	Malarial fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Croup.	Whooping-cough.	Phthisis pulmonalis.	Acute diseases of respiratory organs.	Diseases of the nervous system.	Diseases of the heart.	Cancer.	60 years of age and over.	Under 5 years of age.	Children 7 days old and under.	Barometrical.					
																				Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of barometer from 7 a. m. to 9 p. m.	Total fall of barometer from 7 a. m. to 9 p. m.	Total rise and fall of barometer for 24 hours.	Result of total movements of barometer for 24 hours.	
1	7	3	10		1		1		1		1		1		1					28.88	-.45	.23	.08	.72	.23
2	4	2	6						1		1		1		1					28.28	.13	.18	.19	.01	.01
3	3	6	9										4							28.28	.08	.19	.19	.01	.01
4	4	0	4		2				1		1		4							28.08	.11	.16	.19	.19	.19
5	7	2	9		10				1		1		1							28.74	.23	.07	.11	.43	.19
6	1	4	5	1									1							28.37	.12	.11	.08	.24	.16
7	13	5	18		1				2		1		3		1					28.30	.23	.13	.08	.34	.34
8	7	6	13				1				1		3		1					28.15	.18	.24	.06	.43	.04
9	5	1	6										2		1					28.51	.20	.08	.04	.30	.30
10	5	3	8		2						3		3		1					28.55	.05	.08	.07	.18	.04
11	3	3	6										3		1					28.29	.09	.19	.23	.33	.04
12	3	2	5				1		1				3		1					28.38	.18	.21	.21	.33	.15
13	6	2	8										4		4					28.37	.04	.19	.27	.33	.15
14	6	5	11		1		1		1				3		2					28.77	.02	.27	.27	.33	.15
15	4	18	22						2		4		3		4					28.89	.18	.10	.05	.33	.15
16	2	10	12						2		1		3		1					28.94	.05	.09	.07	.18	.15
17	3	2	5						1		1		3		1					28.06	.02	.08	.05	.11	.15
18	10	3	13						1		2		1		1					28.95	.02	.12	.05	.21	.15
19	3	12	15										2		1					28.13	.14	.03	.18	.32	.15
20	3	5	8								2		3		1					28.36	.02	.31	.33	.33	.15
21	5	4	9						1		1		5		1					28.39	.02	.18	.20	.33	.15
22	7	1	8		1						3		3		1					28.28	.15	.14	.26	.33	.15
23	5	6	11						1		2		4		2					28.35	.05	.08	.08	.33	.15
24	5	6	11						1		1		3		1					28.35	.05	.08	.08	.33	.15
25	3	12	15				1		1		1		3		1					28.15	.05	.28	.31	.31	.15
26	7	6	13		1				1		4		3		1					28.31	.11	.08	.11	.31	.15
27	2	5	7								4		2		1					28.39	.01	.01	.08	.07	.08
28	2	9	11						1		2		3		2					28.09	.15	.05	.23	.33	.15
29	3	18	21		3				1		5		1		1					28.91	.12	.04	.12	.33	.15
30	7	5	12						3		1		1		1					28.28	.24	.37	.37	.31	.15
31	7	4	11	1	2						2		1		1					28.46	.06	.11	.17	.33	.15
Totals and means.	202	124	326	3	18	3	7	3	16	17	15	57	45	14	7	68	118	17		30.08	+1.58	2.39	2.55	8.53	+2.00
																					-1.66				-2.98

classified by color, different diseases, and ages, &c.—Continued.

DECEMBER, 1880.

Meteorological conditions.														
Thermometrical.														
Record of dry bulb.														
Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of thermometer from 7 a. m. to 9 p. m.	Total fall of thermometer from 7 a. m. to 9 p. m.	Total rise and fall of thermometer for 24 hours.	Result of total movements of thermometer for 24 hours.	Maximum temperature.	Minimum temperature.	Range of maximum and minimum temperature.	Daily mean of wet bulb.	Daily mean percentage of humidity.	Resultant direction and force of wind per hour.	Mean force of wind per hour.	State of weather.	Daily rainfall in inches.
32.7	—	1	9	2	13	43.0	31.0	12.0	36.5	81.7	NW. 24	24	Fair.....	1.07
40.0	—	4	10	21	—	46.0	35.5	10.5	35.3	53.3	W. 24	4	Fair.....	—
34.5	—	7	8	23	—	40.0	28.0	12.0	31.5	63.7	NW. 3	3	Clear.....	—
30.0	—	8	22	4	10	48.0	23.0	25.0	30.5	74.7	S. 24	3	Fair.....	(*)
51.5	+	1	—	11	—	54.0	41.0	13.0	50.5	92.7	S. 64	64	Rainy.....	.54
40.7	—	6	14	20	—	53.0	32.0	21.0	31.3	54.7	NW. 54	54	Cloudy.....	—
29.0	—	13	3	6	20	32.0	16.0	16.0	17.8	62.0	NW. 114	114	Clear.....	—
25.5	+	5	11	12	28	35.0	16.0	19.0	22.8	70.0	NW. 24	8	Cloudy.....	(*)
19.0	—	8	10	4	23	25.0	18.0	7.0	17.5	75.0	NW. 24	9	Clear.....	—
16.0	—	8	10	6	24	22.0	11.0	11.0	14.3	63.7	NW. 24	94	Clear.....	—
24.0	—	4	18	4	25	31.0	11.5	19.5	22.5	75.3	W. 2	24	Clear.....	—
37.0	—	2	19	3	24	45.5	20.0	25.5	34.9	67.0	S. 54	54	Fair.....	.16
32.0	—	7	9	7	21	45.0	32.0	13.0	35.9	68.8	NW. 24	4	Clear.....	.06
42.0	—	9	18	1	23	48.0	28.0	20.0	39.9	83.0	W. 14	34	Cloudy.....	.14
32.0	—	12	10	6	28	49.0	33.5	15.5	35.3	70.5	S. 14	24	Fair.....	—
37.0	—	11	11	12	26	45.0	31.0	14.0	32.5	65.7	N. 3	3	Clear.....	.16
32.0	—	7	7	2	14	38.0	28.0	10.0	30.5	69.0	W. 3	34	Fair.....	.17
34.0	—	2	6	6	20	38.0	31.0	7.0	32.0	76.3	NW. 5	34	Clear.....	.04
36.5	—	4	2	3	26	38.0	27.0	11.0	36.0	69.7	N. 7	74	Clear.....	.19
38.5	—	2	4	2	6	32.0	27.0	5.0	29.5	92.7	NE. 64	9	Snow & sleet.	.51
38.7	—	1	4	5	—	36.0	29.0	7.0	33.0	98.3	NW. 114	114	Snow.....	.42
28.0	—	10	10	8	28	35.0	24.0	11.0	35.0	70.7	NW. 74	74	Clear.....	.28
26.0	—	12	14	2	26	29.0	13.0	16.0	22.3	65.7	NW. 24	24	Cloudy.....	.01
28.0	—	9	5	8	11	31.0	24.0	7.0	26.5	81.3	NE. 2	24	Snow.....	.08
32.0	—	7	15	22	—	36.0	16.0	20.0	31.5	92.0	N. 5	64	Rainy.....	.28
32.2	—	4	2	6	2	35.0	31.0	4.0	32.5	93.0	N. 9	94	Snow & rain.	.55
32.0	—	2	4	10	—	36.0	29.0	7.0	30.8	78.3	W. 4	44	Cloudy.....	.37
16.7	—	13	—	4	17	30.0	13.0	17.0	15.8	83.7	N. 54	64	Snow.....	.02
2.0	—	3	—	6	9	14.0	2.0	12.0	8.0	78.7	NW. 84	84	Snow.....	.15
2.2	—	10	13	7	30	4.0	9.0	—	7.0	65.7	NW. 4	44	Clear.....	.29
6.7	—	12	21	10	43	12.0	—13.0	25.0	—0.5	61.7	S. 1	24	Clear.....	.31
28.0	+	6	289	149	623	—77	35.8	21.8	14.0	27.8	74.2	5.71	—	4.02
	—179				—110									

536 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

TABLE XI.—*Showing daily mortality, divided under 19 heads,*

JANUARY, 1881.

Day of month.	Mortality.															Meteorological conditions.							
	Deaths of whites.	Deaths of colored.	Total deaths.													Barometrical.							
																Dially mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total Rise of barometer from 7 a. m. to 9 p. m.	Total fall of barometer from 7 a. m. to 9 p. m.	Total rise and fall of barometer for 24 hours.	Result of total movements of barometer for 24 hours.		
				Diarrhoeal diseases, 5 years of age and over.	Diarrhoeal and intestinal diseases, inanition, and marasmus, under 5 years of age.	Malarial fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Croup.	Whooping cough.	Phthisis pulmonalis.	Acute diseases of respiratory organs.	Diseases of the nervous system.	Diseases of the heart.							Cancer.	Under 5 years of age.	Children 7 days old and under.
1.	7	5	12			1	1					3	3	3	1	3	1	30.41	+.09	.09	.15	+.09	
2.	6	1	7									1	1	1	1	1	3	1	30.31	-.07	.07	.17	+.07
3.	6	6	12									1	1	1	1	1	3	1	30.31	-.07	.07	.17	+.07
4.	8	11	19									4	5	2	2	2	3	7	30.14	+.02	.12	.06	+.02
5.	7	7	14									4	5	2	2	2	3	1	29.91	-.05	.05	.17	+.05
6.	9	5	14									4	5	2	2	2	3	1	29.93	-.05	.05	.17	+.05
7.	4	6	10									4	5	2	2	2	3	1	30.31	+.20	.20	.34	+.20
8.	7	2	9									3	3	1	1	1	3	1	30.53	+.15	.15	.30	+.15
9.	3	2	5									1	2	1	1	1	3	2	30.23	-.06	.06	.31	+.06
10.	3	4	7			1						3	4	1	1	1	1	1	30	+.23	.23	.57	+.23
11.	7	8	15									4	4	2	2	2	1	1	30.15	+.21	.21	.43	+.21
12.	2	13	15									2	2	2	2	2	5	1	29.93	-.15	.15	.19	-.15
13.	9	2	12									3	3	2	2	2	1	1	29.93	-.15	.15	.19	-.15
14.	7	3	10									3	3	2	2	2	1	1	29.93	-.15	.15	.19	-.15
15.	9	9	18									4	6	4	4	4	1	3	30.18	+.10	.10	.11	+.10
16.	11	4	15									6	6	3	3	3	1	4	30.19	0	.00	.02	0
17.	8	8	16									1	1	1	1	1	2	4	30.48	+.12	.12	.27	+.12
18.	3	1	4									2	2	2	2	2	1	1	30.61	+.13	.13	.10	+.13
19.	3	5	8									1	1	1	1	1	3	3	30.25	-.21	.21	.24	-.21
20.	3	8	11									4	4	2	2	2	1	1	30	+.07	.07	.23	+.07
21.	5	7	12			1						3	3	1	1	1	2	3	29.44	-.56	.56	.73	-.56
22.	6	6	12									3	3	2	2	2	3	3	29.93	+.27	.27	.50	+.27
23.	5	3	8									1	1	1	1	1	3	3	30.14	+.09	.10	.02	+.09
24.	2	7	9									1	1	1	1	1	4	1	30.21	+.04	.04	.01	+.04
25.	6	3	9									3	3	2	2	2	3	1	30.27	+.02	.02	.10	+.02
26.	7	6	13									3	3	2	2	2	3	3	30.14	+.01	.01	.23	+.01
27.	8	3	11									2	2	1	1	1	5	4	30.34	+.24	.24	.29	+.24
28.	7	7	14									3	3	2	2	2	1	1	30.56	+.17	.17	.21	+.17
29.	4	3	7									3	3	1	1	1	1	2	30.46	-.01	.01	.17	-.01
30.	7	9	16									3	3	2	2	2	4	3	30.09	-.37	.37	.11	-.37
31.	8	3	12									3	3	2	2	2	1	1	30.19	+.10	.10	.11	+.10
Totals and means.	200	132	332	6	8	7	5	5	10	3	2	60	61	41	11	12	78	103	30.18	+2.08	2.44	2.53	+2.91
																				-2.15			-2.15

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 537

classified by color, different diseases, and ages, &c.—Continued.

JANUARY, 1881.

Meteorological conditions.

Thermometrical.

Record of dry bulb.

Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of thermometer from 7 a. m. to 9 p. m.	Total fall of thermometer from 7 a. m. to 9 p. m.	Total rise and fall of thermometer for 24 hours.	Result of total movements of thermometer for 24 hours.	Maximum temperature.	Minimum temperature.	Range of maximum and minimum temperature.	Daily mean of wet bulb.	Daily mean percentage of humidity.	Resultant direction and force of wind per hour.	Mean force of wind per hour.	State of weather.	Daily rainfall in inches.	Day of month.
11	—	11	28	39	+17	19	—14	33	10	74	NE.	3	3	Fair	1
20.5	—	2	10	18	+2	27	14	13	10.5	96.7	N.	1	3	Snow and clear	2
30.7	—	17	25	44	+6	36	3	33	19.4	80.3	SW.	1	2	Fair	3
30	—	17	25	13	+7	33	18	15	29.3	96.3	E.	1	1	Rain and sleet.	4
32.3	—	0	1	2	0	34	32	2	33	96.7	NE.	4	4	Rainy	5
34.5	+	1	2	5	+1	36	33	3	34.3	96.7	W.	2	2	Cloudy	6
32.7	—	8	9	20	—	41	39	12	31	75	NW.	3	5	Cloudy	7
24.2	—	18	9	25	+7	39	18	11	23.3	75.3	NE.	4	4	Cloudy	8
26.3	—	3	9	12	+6	34	21	13	23.1	96	N.	4	4	Rain, sleet, and snow.	9
32.7	+	5	4	10	+3	38	28	10	32.3	90	NW.	5	5	Cloudy	10
36	—	7	2	12	+8	31	23	8	24.5	80.3	NW.	3	4	Cloudy	11
26.5	—	12	5	22	+2	34	19	15	24.3	73.3	NW.	3	3	Fair	12
30	—	2	14	1	+15	44	24	20	35.3	67.7	S.	9	9	Cloudy	13
27.2	—	3	20	23	—23	42	15	27	35	73	NW.	8	11	Cloudy	14
17	—	10	11	21	+1	30	8	13	15.5	72.3	N.	1	3	Cloudy	15
22.2	—	3	9	3	+4	37	17	10	22	82.3	E.	3	3	Cloudy	16
31.2	+	1	12	7	+7	39	30	19	23.3	70	NW.	5	5	Fair	17
36.7	—	11	11	8	—8	31	18	13	25.3	80.7	SW.	1	1	Fair	18
30.5	—	0	4	1	+3	32	26	6	29.3	85.3	N.	1	3	Cloudy	19
29.5	—	8	10	18	+2	33	23	11	23.9	94.3	NE.	3	2	Cloudy	20
37.5	+	4	1	5	+5	40	32	8	36.3	94	N.	1	7	Rainy	21
36	—	1	2	6	—5	40	31	9	24.3	62.3	NW.	7	7	Clear	22
30.6	—	5	4	15	+8	35	25	10	23.3	75	W.	5	5	Fair	23
36.5	—	6	4	16	+4	30	22.5	7.5	24.3	73	NW.	3	3	Fair	24
27	—	3	6	1	+7	29	22	7	24.5	69.3	NW.	3	3	Cloudy	25
31.7	—	7	15	1	+23	38	19	19	23.3	95.7	W.	4	5	Clear	26
20.2	—	17	5	3	—15	31	15	16	17	53	N.	8	9	Clear	27
22	—	4	10	1	+5	28	14	14	19.3	56	NW.	6	7	Clear	28
27.2	—	4	11	4	+9	33	18.5	13.5	25	96	N.	1	2	Cloudy	29
33	+	1	6	1	+6	36	25.5	10.5	30.3	70	NE.	1	1	Cloudy	30
35.2	—	3	9	6	+7	40	27	13	32.5	72.3	NE.	2	4	Cloudy	31
572.3	+10	271	99	523	+104	33.3	20.2	13.1	26.1	77.6			4.4	5.14	
28.2	—148				—70										

TABLE XI.—Showing daily mortality, divided under 19 heads,

FEBRUARY, 1881.

Day of month.	Mortality.													Meteorological conditions.				
	Deaths of whites.	Deaths of colored.	Total deaths.	Diarrhoeal diseases, 5 years of age and over.										Barometrical.				
				Diarrhoeal and intestinal diseases, infantile, and marasmus, under 5 years of age.										Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of barometer from 7 a. m. to 9 p. m.	Total fall of barometer from 7 a. m. to 9 p. m.	Total rise and fall of barometer for 24 hours.	Result of total movements of barometer for 24 hours.
				Malarial fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Croup.	Whooping-cough.	Phthisis pulmonalis.	Acute diseases of respiratory organs.	Diseases of the nervous system.	Diseases of the heart.					
1	5	7	12															
2	6	6	12															
3	7	5	12															
4	7	7	14															
5	8	4	12															
6	4	4	8															
7	4	2	6															
8	4	5	9															
9	6	7	13															
10	6	7	13															
11	4	5	9															
12	7	7	14															
13	4	6	10															
14	4	5	9															
15	7	5	12															
16	9	7	16															
17	6	12	18															
18	4	6	10															
19	6	9	15															
20	6	10	16															
21	4	7	11															
22	8	2	10															
23	5	7	12															
24	9	4	13															
25	6	6	12															
26	15	8	23															
27	7	11	18															
28	7	5	12															
Totals and means.	170	178	348	5	16	10	8	2	10	10	71	68	38	14	9	57	129	20
														30.20	+1.88	3.03	3.04	10.45
															-2.50			+2.31
																		-2.94

classified by color, different diseases, and ages, &c.—Continued.

FEBRUARY, 1881.

Meteorological conditions.																		
Thermometrical.										Daily mean percentage of humidity.	Resultant direction and force of wind per hour.	Mean force of wind per hour.	State of weather.	Daily rainfall in inches.	Day of month.			
Record of dry bulb.																		
Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of thermometer from 7 a. m. to 9 p. m.	Total fall of thermometer from 7 a. m. to 9 p. m.	Total rise and fall of thermometer for 24 hours.	Result of total movements of thermometer for 24 hours.	Maximum temperature.	Minimum temperature.	Range of maximum and minimum temperature.										
19	—	12	—	6	18	—	18	30	12	18	88	N.	7	74	Rain and snow	.41	1	
8.5	—	14	10	4	28	—	8	14	3	12	71	NW.	4	44	Fair	—	2	
12.7	—	1	11	5	17	+	8	19	4.5	14.5	72	NW.	5	54	Fair	—	3	
12.7	—	6	17	4	27	+	7	26	6.5	19.5	67	NW.	5	54	Clear	—	4	
19.5	—	12	16	3	31	+	1	26	7.5	17.5	67.8	NW.	7	74	Clear	—	5	
24.7	—	6	17	8	31	+	3	34	14	20	71.5	N.	4	5	Clear	—	6	
26.5	—	16	20	4	40	+	0	25	7	28	70	NE.	3	3	Fair	—	7	
26.5	—	4	12	—	16	+	3	40	26	14	83.5	74	NE.	4	44	Cloudy	—	8
42.7	—	2	14	—	16	+	12	51	36	15	84.8	E.	4	44	Cloudy	—	9	
42.7	—	1	11	19	31	—	9	64	30	25	95.3	S.	1	24	Rainy	—	10	
46	—	8	23	9	39	+	5	56	33	23	92.7	E.	3	24	Cloudy	—	11	
50.3	+	10	5	21	36	+	6	62	36	27	95.3	SE.	8	12	Cloudy	—	12	
39.7	—	12	5	6	23	—	12	37	27	10	74.3	W.	11	12	Fair	—	13	
32.7	—	2	5	2	9	+	1	32	25	7	26.5	60.7	NW.	7	74	Clear	—	14
31	—	6	14	5	25	+	2	39	21.5	17.5	66.7	SE.	18	24	Fair	—	15	
34.5	—	0	18	18	36	+	0	51	30	21	62.3	NW.	8	9	Fair	—	16	
31.5	—	8	12	3	23	+	1	37	24	13	65.3	NW.	4	4	Clear	—	17	
40.7	—	1	12	—	13	+	11	45	30	15	67.3	S.	8	84	Cloudy	—	18	
40.5	—	3	4	7	14	—	0	47	34	13	68.7	N.	4	5	Cloudy	—	19	
35.5	—	11	12	1	24	—	0	40	37	13	74.7	E.	3	24	Clear	—	20	
35	—	4	10	7	21	—	1	45	34	11	73.7	NW.	5	64	Fair	—	21	
32.2	—	9	17	3	29	+	6	46	27	19	78.3	S.	3	24	Fair	—	22	
34.3	—	3	14	20	—	14	42	28	19	30.5	63.3	NW.	7	84	Clear	—	23	
31.7	—	15	12	—	27	—	2	27	12	15	61.7	NW.	3	74	Clear	—	24	
34.5	+	6	12	7	25	+	11	44	25	19	67.7	NW.	3	24	Cloudy	—	25	
37	—	8	12	—	20	+	4	41	27	14	66.5	71.7	E.	5	54	Cloudy	—	26
45.7	—	5	16	—	21	+	11	56	24	22	91.3	NE.	4	5	Cloudy	—	27	
45	+	1	—	12	13	—	11	57	25	22	82.7	NW.	6	64	Cloudy	—	28	
32.2	+ 17	325	168	679	— 89	40.8	23.5	17.3	30.9	72.4	—	5.8	—	3.95	—	—		
—100																		

540 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

TABLE XI.—*Showing daily mortality, divided under 19 heads,*

MARCH, 1881.

Day of month.	Mortality.																			Meteorological conditions.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Deaths of whites.	Deaths of colored.	Total deaths.	Diarrhoeal diseases, 5 years of age and over.	Diarrhoeal and intestinal diseases, infantile, and marasmus, under 5 years of age.	Malarial fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Group.	Whooping-cough.	Phtisis pulmonalis.	Acute diseases of respiratory organs.	Diseases of the nervous system.	Diseases of the heart.	Cancer.	60 years of age and over.	Under 5 years of age.	Children 7 days old and under.	Barometrical.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
																				Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of barometer from 7 a. m. to 9 p. m.	Total fall of barometer from 7 a. m. to 9 p. m.	Total rise and fall of barometer for 24 hours.	Result of total movements of barometer for 24 hours.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
1	4	6	10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	</

classified by color, different diseases, and ages, &c.—Continued.

MARCH, 1881.



Meteorological conditions.

Thermometrical.																			
Récord of dry bulb.																			
Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of thermometer from 7 a. m. to 9 p. m.	Total fall of thermometer from 7 a. m. to 9 p. m.	Total rise and fall of thermometer for 24 hours.	Result of total movements of thermometer for 24 hours.	Maximum temperature.	Minimum temperature.	Range of maximum and minimum temperature.	Daily mean of wet bulb.	Daily mean percentage of humidity.	Resultant direction and force of wind per hour.	Mean force of wind per hour.	State of weather.	Daily rainfall in inches.	Day of month.				
22.7	—	12	5	0	23	—	13	35	27	8	25.8	64.3	W.	15	16	Fair.....	.....	1
24.2	—	1	15	0	22	—	8	42	26	14	26	54.3	W.	8	9	Clear.....	.....	2
22.5	—	7	10	4	21	—	1	39	26	13	32.8	89.3	N.E.	4	6	Cloudy....	.81	3	
22.5	+	1	.....	5	0	4	4	36	29	7	30.8	82.7	W.	8	8	Rain and snow.	.48	4
20	—	1	4	4	0	1	1	34	25	9	27	63.7	N.W.	7	7	Cloudy....	.....	5
25.7	—	3	15	3	21	—	0	42	25	17	32.3	65.3	N.W.	6	6	Clear.....	(")	6	
20.5	—	3	10	6	19	—	1	47	32	15	35.5	62.3	N.W.	6	6	Clear.....	.....	7
42.2	—	9	26	10	42	—	4	53	28	5	39.5	76.3	S.E.	3	3	Cloudy....	.14	8	
41.2	—	3	4	1	8	—	0	45	38	7	39.8	88.3	N.W.	16	18	Rainy.....	2.70	9	
47	—	1	10	5	16	—	4	55	40	15	41.6	59.7	N.W.	12	12	Fair.....	.04	10	
47	—	11	12	6	29	—	5	49	35	14	35	44	W.	6	7	Fair.....	.....	11
26.7	—	8	5	2	15	—	5	40	34	6	33.8	65.7	N.E.	4	4	Cloudy....	.30	12	
42.5	—	5	15	3	20	—	10	49	30	19	39.3	78.3	N.W.	3	5	Cloudy....	.....	13
41.5	—	7	3	2	12	—	4	46	38	8	36.8	60	N.W.	9	9	Cloudy....	.....	14
44	—	7	19	8	34	—	6	54	32	22	40.5	68.7	S.	2	3	Fair.....	.....	15
52.5	—	5	20	5	30	—	10	65	37	28	47.5	65.3	S.	3	3	Cloudy....	.....	16
52.7	—	11	1	4	16	—	14	65	40	15	41.3	36.3	N.E.	8	8	Cloudy....	.08	17	
50	—	2	7	4	9	—	5	46	38	8	42.8	31.7	N.E.	4	4	Cloudy....	.02	18	
49.5	—	4	12	1	16	—	8	54	41	13	50	100	N.E.	4	4	Rainy.....	.64	19	
42.5	—	9	6	6	21	—	9	53	41	12	43	75.7	N.W.	1	2	Cloudy....	.04	20	
42.2	—	6	11	8	25	—	3	51	37	14	37.3	51.3	W.	3	3	Clear.....	.....	21
39	—	8	10	5	23	—	3	45	33	12	34.8	59.7	W.	3	3	Fair.....	.....	22
25.5	—	10	8	3	21	—	5	44	32	5	33	50	N.W.	9	10	Fair.....	(")	23	
48.5	—	4	16	7	28	—	2	52	35	19	37.8	47.7	N.W.	5	6	Clear.....	.....	24
48.5	—	4	17	11	32	—	2	60	39	21	40.8	49.7	N.W.	5	5	Fair.....	.....	25
39.5	—	15	8	3	26	—	10	47	36	17	32.5	67	N.W.	12	12	Snow and fair.	.14	26	
40	—	4	10	1	15	—	5	44	31	13	33.8	49.3	W.	14	14	Clear.....	.....	27
48.5	—	6	20	5	31	—	9	58	33	5	40.3	41.7	W.	4	4	Clear.....	.....	28
44.7	—	10	11	9	30	—	8	52	39	13	40.3	62.3	N.E.	6	7	Fair.....	.....	29
33.5	—	4	.....	8	12	—	12	40	31	9	33.8	92.7	N.W.	5	11	Rain and snow.	1.11	30
37.2	+	2	7	2	11	—	7	42	30	12	33.8	66	W.	15	15	Snow and fair.	.01	31	
40.7	+	3	314	145	641	—	92	47.5	33.3	14.2	36.8	67.3	N. W.	.....	8.0	.....	6.61	.....
	—	179				—	99											.21	

TABLE XI.—Showing daily mortality, divided under 19 heads,

APRIL, 1881.

Day of month.	Mortality.																			Meteorological conditions.					
	Deaths of whites.	Deaths of colored.	Total deaths.	Diarrhoeal diseases, 5 years of age and over.	Diarrhoeal and intestinal diseases, insurrection, and marasmus, under 5 years of age.	Malarial fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Croup.	Whooping-cough.	Phthisis pulmonalis.	Acute diseases of respiratory organs.	Diseases of the nervous system.	Diseases of the heart.	Cancer.	60 years of age and over.	Under 5 years of age.	Children 7 days old and under.	Barometrical.					
																				Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of barometer from 7 a. m. to 9 p. m.	Total fall of barometer from 7 a. m. to 9 p. m.	Total rise and fall of barometer for 24 hours.	Result of total movements of barometer for 24 hours.
1.	5	7	12									5	2	2	1	1	3	2	2	29.04	-.06	.13	-.18	-.13	
2.	7	7	14		1							3	2	2	1	1	3	3	3	30.03	-.05	.12	-.06	-.06	
3.	6	6	12									3	1	3	2	1	2	4	4	29.06	-.02	.13	-.17	-.15	
4.	7	7	14									3	3	3	3	2	2	2	2	29.76	-.13	.10	-.33	-.13	
5.	9	7	16		2							5	3	3	3	1	1	7	3	29.79	-.03	.07	-.17	-.03	
6.	1	9	10	1								2	2	2	2	1	1	2	2	29.88	-.02	.20	-.04	-.14	
7.	2	13	15		1							5	4	4	4	1	1	1	1	30.05	-.13	.01	-.05	-.18	
8.	3	3	6									3	1	3	3	2	2	2	2	30.06	-.05	.13	-.18	-.18	
9.	3	7	10									3	2	3	3	2	2	2	2	30.06	-.01	.11	-.01	-.09	
10.	3	2	5									3	2	3	3	2	2	2	2	30.06	-.01	.11	-.01	-.09	
11.	3	2	5									3	2	3	3	2	2	2	2	30.06	-.10	.06	-.16	-.04	
12.	7	3	10	1								4	2	1	1	1	1	1	1	30.06	-.07	.12	-.21	-.07	
13.	4	6	10									2	1	3	3	1	1	1	1	30.06	-.08	.14	-.22	-.08	
14.	5	5	10									4	2	1	1	1	1	1	1	30.06	-.07	.12	-.21	-.07	
15.	10	9	19									6	2	1	1	2	3	3	3	30.06	-.03	.06	-.17	-.01	
16.	6	4	10									1	1	3	1	1	5	4	4	30.08	-.08	.15	-.23	-.23	
17.	4	9	13	1								4	4	1	1	2	2	2	2	30.02	-.15	.01	-.04	-.13	
18.	3	4	7									2	3	1	1	1	5	4	4	30.07	-.05	.10	-.07	-.03	
19.	6	5	11	1								1	2	1	1	1	5	4	4	30.14	-.15	.08	-.18	-.13	
20.	7	5	12	1								2	3	1	1	1	5	4	4	30.12	-.01	.05	-.02	-.03	
21.	5	3	8									2	2	1	1	1	5	5	5	30.13	-.04	.07	-.11	-.08	
22.	5	4	9									3	3	1	1	1	2	3	3	30.13	-.03	.05	-.04	-.12	
23.	2	4	6									1	1	1	1	1	1	3	1	30.25	-.07	.04	-.11	-.11	
24.	3	13	16									3	2	1	1	1	7	1	1	30.11	-.08	.27	-.30	-.24	
25.	5	12	17									6	3	4	4	2	6	1	1	30.00	-.02	.14	-.16	-.14	
26.	9	9	18									8	4	2	2	2	10	8	8	30.79	-.03	.05	-.09	-.07	
27.	3	3	6									2	1	1	1	1	1	1	1	30.02	-.14	.02	-.03	-.19	
28.	4	3	7									1	1	1	1	1	1	1	1	29.99	-.10	.05	-.15	-.05	
29.	7	5	12	1								1	3	2	1	1	1	1	1	30.07	-.08	.20	-.22	-.17	
30.	9	5	14									4	1	3	1	2	4	3	3	30.30	-.18	.06	-.20	-.18	
Totals and means.	187	189	376	11	10	5	5	2	7	4	1	85	62	61	14	11	74	122	18	29.95	+1.71	1.08	1.96	5.98	+2.16
																					-.63				-1.36

classified by color, different diseases, and ages, &c.—Continued.

APRIL, 1881.

Meteorological conditions.															
Thermometrical.										Daily mean of humidity.	Resultant direction and force of wind per hour.	Mean force of wind per hour.	State of weather.	Daily rainfall in inches.	Day of month.
Record of dry bulb.															
Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of thermometer from 7 a. m. to 9 p. m.	Total fall of thermometer from 7 a. m. to 9 p. m.	Total rise and fall of thermometer for 24 hours.	Result of total movements of thermometer for 24 hours.	Maximum temperature.	Minimum temperature.	Range of maximum and minimum temperature.	Daily mean of wet bulb.						
26	2	4	6	12	4	41	23	8	33	68.7	NW. 12	12	Cloudy	.01	1
24.5	4	10	6	20	4	41	29.5	11.5	30.5	62.3	NW. 16	16	Clear	.02	2
23.5	6	6	6	8	4	41	31.7	9.3	32.5	62	W. 5	6	Cloudy	.01	3
23.5	7	6	5	17	7	39	29	10	30.5	77	NW. 9	9	Cloudy	.01	4
20.7	5	7	1	13	1	36	24.2	11.8	27.5	65	NW. 11	11	Fair	.05	5
24.2	2	11	8	21	1	41	27.7	13.3	29.5	64.7	NW. 12	12	Clear	.03	6
42.7	1	19	7	27	11	55	29	26	37	54.3	NW. 4	4	Clear	.07	7
39.2	6	8	2	11	5	42	34.5	7.5	33.5	90.7	NE. 3	3	Rainy	.08	8
43.5	3	4	3	10	4	47	32.5	8.5	42.3	86.7	NW. 3	3	Rainy	.22	9
50	1	15	5	21	9	60	40	20	43.3	58.7	NW. 9	9	Fair	.03	10
55	8	18	5	31	5	67	46.8	26.2	47.8	56.7	W. 1	1	Fair	.11	11
52.2	3	4	7	7	1	61	49.1	11.9	54.3	84.7	S. 2	2	Rainy	.21	12
45	14	2	17	17	13	54.9	42.7	12.2	44.3	94.7	N. 10	10	Cloudy	.28	13
46	5	10	3	18	2	50.3	39.7	10.6	40.3	87.7	N. 6	6	Cloudy	.14	14
50	6	14	23	23	2	59	33.6	20.4	42.8	48.3	NW. 6	6	Clear	.15	15
52	4	10	7	21	1	69	45.5	13.5	44	44	NW. 7	7	Clear	.16	16
56	8	14	23	24	6	64	48.2	20.8	46.8	41.8	NW. 5	5	Fair	.17	17
49.7	8	7	9	24	10	58	46	12	47.3	80	NE. 2	2	Cloudy	.19	18
52.2	2	13	5	20	7	58.9	44.1	14.8	46.3	58.7	E. 2	2	Cloudy	.02	19
45.5	7	8	1	9	6	59	44	15	43	79	NE. 3	3	Cloudy	.13	20
52.2	7	25	9	41	9	64.8	35.7	29.1	48	70.3	S. 4	4	Fair	.21	21
55	2	12	4	23	1	62.8	45.5	16.3	52.5	83.7	S. 4	4	Fair	.20	22
63	7	18	9	29	7	75	48.1	26.9	53.8	82.7	NW. 1	1	Clear	.23	23
63.5	8	24	9	41	7	84	49.4	34.6	61.8	86	S. 5	5	Clear	.24	24
72	7	20	12	39	7	84.2	58.8	25.4	64.3	84.7	S. 3	3	Fair	.11	25
74.6	13	5	25	39	10	86.7	64.6	21.1	70	78	S. 3	3	Fair	.27	26
63.7	9	22	2	20	7	72.8	60	12.8	59.8	72.7	W. 2	2	Cloudy	.26	27
63.5	5	6	6	37	9	80.5	51.6	28.9	61.3	68	SW. 3	3	Fair	.28	28
64.7	5	5	8	19	9	72.8	57	15.8	56	56.3	NW. 6	6	Cloudy	.29	29
61	8	14	7	29	1	70.3	48.1	22.2	50	43	W. 3	3	Clear	.30	30
51.1	2	336.5	156.5	656	87	59.6	42.8	17.8	45.9	66.0	NW.	6.6	.....	2.08	
160					67										

TABLE XL—Showing daily mortality, divided under 19 heads:

MAY, 1881.

[illegible]

classified by color, different diseases, and ages, &c.—Continued.

MAY, 1881.

Meteorological conditions.

Meteorological conditions.																		
Thermometrical.																		
Record of dry bulb.																		
Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of thermometer from 7 a. m. to 9 p. m.	Total fall of thermometer from 7 a. m. to 9 p. m.	Total rise and fall of thermometer for 24 hours.	Result of total movements of thermometer for 24 hours.	Maximum temperature.	Minimum temperature.	Range of maximum and minimum temperature.	Daily mean of wet bulb.	Daily mean percentage of humidity.	Resultant direction and force of wind per hour.	Mean force of wind per hour.	State of weather.	Daily rain fall in inches.	Day of month.			
56.9	+	12	18	6	36	68.3	43.5	24.8	52.8	56.7	SE.	44	6	Clear	.....	1	
65.4	+	2	10.5	12	25	76.8	57.5	19.3	62	78.8	SW.	24	44	Cloudy	.11	2		
52.5	-	10	1	.....	11	61.8	49.1	12.7	49	77	N.	4	5	Cloudy	.10	3	
56.7	-	2	8	.....	23	64.8	49.6	15.2	51.5	67.8	S.	2	34	Cloudy	.....	4
54.7	-	5	14	.....	25	65.8	47.5	18.3	51.5	56.7	E.	7	7	Fair	.....	5
60.9	-	5	9.5	0.5	15	67	54	13	59.5	91	S.	1	18	Cloudy	.10	6		
64.2	-	4	18	9	26	74.8	53.1	21.7	57.5	65	SE.	1	3	Clear	.....	7	
64.7	-	7	17	8	32	77.5	51.6	25.9	58.8	70.7	S.	44	5	Clear	.....	8	
71.2	-	4	79	8	31	81.8	55.7	26.1	63.8	65	S.	44	44	Fair	.....	9	
75.2	-	4	17	11	32	86	63.8	22.7	67	63.7	S.	64	64	Clear	.....	10	
84.5	-	4	20	11	35	93.8	65	28.3	70.5	62	SW.	24	34	Clear	.....	11	
82.2	-	6	19	10	35	92.8	68.6	23.2	72.8	62	W.	4	44	Fair	.....	12	
84.5	-	3	16	13	32	95.3	75.6	19.7	74	57.7	NW.	34	4	Fair	(?)	13		
72.2	-	11	11	14	36	83.2	66.1	17.1	67	71.7	E.	5	64	Fair	(?)	14		
76.2	-	8	11	6	20	83.7	65.7	18	64.8	51.7	SW.	2	5	Fair	.....	15	
62	-	13	4	8	25	70.8	57.3	13.5	55	62.7	NW.	64	64	Fair	.....	16	
56.2	-	3	1	1	5	58.8	52.8	6	54	87.8	NW.	34	34	Cloudy	.20	17		
54.5	-	4	6	4	14	58	50.8	7.2	53	87.7	N.	44	5	Cloudy	.22	18		
54.6	-	.....	4.5	1.5	6	58.8	52.8	6.5	55.5	90.7	SW.	44	44	Rainy	.95	19	
61	-	.....	8	4	12	70.3	53.8	16.5	58	81	NW.	34	3	Clear	.....	20
66.5	-	9	22	6	37	77.8	51.2	26.6	60.8	75.7	SE.	3	34	Fair	.....	21	
68.2	-	7	9	.....	16	80.2	60.1	20.1	64.5	76.7	S.	34	34	Fair	(?)	22	
68.2	-	5	8	5	18	74.3	54.4	15.9	62	67.7	NE.	34	34	Clear	.....	23	
68.2	-	7	9	3	19	73.2	55.5	17.7	60.8	72.7	NE.	54	54	Fair	.....	24	
72	-	3	18	11	32	82.6	55.8	27.3	63.3	60.7	NE.	4	5	Clear	.....	25	
68.7	-	12	18	4	29	77.1	57.2	19.9	61.5	71.7	N.	24	3	Clear	.....	26	
72.2	-	8	24	11	43	86.7	55.4	31.3	64.8	66.7	S.	24	24	Clear	.....	27	
76.5	-	7	22	12	41	80.7	60.6	20.1	66.5	57.3	S.	44	44	Clear	.....	28	
77.6	-	5	16.5	11.5	33	88.9	65.5	23.4	69.5	65	S.	5	54	Clear	.....	29	
79.7	-	2	13	8	23	89.7	67.9	21.8	71	62.7	S.	24	3	Clear	.....	30	
77	-	5	16	18	39	92	69	23	66.5	64.7	S.	34	44	Fair	.03	31		
67.9	+ 5.5	403	230.5	806	+69	77.2	57.7	19.5	61.7	69.8	3.8	4.4	1.86		
	-167				-18													

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516 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

TABLE XI.—Showing daily mortality, divided under 19 heads,

JUNE, 1881.

Day of month.	Mortality.																	Meteorological conditions.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Deaths of whites.	Deaths of colored.	Total deaths.															Barometrical.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
				Diarrhoeal diseases, 5 years of age and over.	Diarrhoeal and intestinal diseases, inflammation, and marasmus, under 5 years of age.	Malarial fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Croup.	Whooping-cough.	Phthisis pulmonalis.	Acute diseases of respiratory organs.	Diseases of the nervous system.	Diseases of the heart.	Cancer.	60 years of age and over.	Under 5 years of age.	Children 7 days old and under.	Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of barometer from 7 a. m. to 9 p. m.	Total fall of barometer from 7 a. m. to 9 p. m.	Total rise and fall of barometer for 24 hours.	Result of total movements of barometer for 24 hours.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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classified by color, different diseases, and ages, &c.—Continued.

JUNE, 1881.

Meteorological conditions.

Thermometrical.														
Record of dry bulb.														
Daily mean.	Difference between observation taken at 9 p. m. and that of 7 a. m. following.	Total rise of thermometer from 7 a. m. to 9 p. m.	Total fall of thermometer from 7 a. m. to 9 p. m.	Total rise and fall of thermometer for 24 hours.	Result of total movements of thermometer for 24 hours.	Maximum temperature.	Minimum temperature.	Range of maximum and minimum temperature.	Daily mean of wet bulb.	Daily mean percentage of humidity.	Resultant direction and force of wind per hour.	Mean force of wind per hour.	State of weather.	Daily rainfall in inches.
74	—	3	15	13	30	87.5	68.7	19	69.5	78	NW. 4	4½	Cloudy	.09
61	—	3	4	4	12	81.8	59.2	22.6	61	96	NE. 7	2½	Rainy	.43
60	—	2	4	4	11	83.8	57.5	26.3	61	92	N. 4	4	Cloudy	.13
60	—	2	5	—	—	87.8	54.3	33.5	58	88	N. 4	4½	Cloudy	.41
66	—	2	12	6	20	73.6	53.2	20.4	60	67	W. 4	4	Cloudy	.51
66	—	5	6	1	19	71.8	58.8	13	61.2	73	NE. 1	3½	Cloudy	.02
65	—	6	18	12	34	70.4	59.8	10.6	62.5	83	E. 3	2	Cloudy	.51
75	+ 1.5	15	15	34	5	88.8	62	26.8	71	81	SE. 2	3½	Fair	(*)
63	—	7	7	12	—	71	58.6	12.4	62.1	97	NE. 7	7	Rainy	.68
57	—	1	1	5	—	60.2	55.7	4.5	55.8	90	NW. 4	4½	Cloudy	.06
71	+ 4	17	6	27	+15	80.3	56.8	23.5	63.5	65	NW. 2	2½	Fair	.11
73	—	13	8	26	—	81.7	58.6	23.1	66.2	67	E. 1	1	Clear	.12
68	—	6	7	21	—	77.8	62.4	15.4	64.2	77	E. 4	4½	Fair	.13
75	—	1	19	10	30	86.7	64.6	22.1	65.8	64	W. 8	6½	Fair	.14
75	—	3	11	10	24	84.7	67.3	17.4	64.5	58	NW. 6	6½	Clear	.15
75	—	5	14	6	25	84.6	61.3	23.3	66.8	60	SW. 2	2½	Fair	.16
78	—	9	13	8	30	89.1	66.5	22.6	72.8	76	W. 3	3½	Fair	.48
78	—	7	14	2	23	89.1	67.7	21.4	69	60	NW. 3	3½	Clear	.18
78	—	6	16	9	31	88.8	68.5	20.3	71.8	70	SW. 2	3	Fair	.01
76	—	8	14	18	35	89.8	68.7	21	71.5	75	S. 2	4½	Cloudy	.22
72	—	6	7	13	—	78.8	66.6	12.1	63.3	58	NW. 6	6½	Fair	.21
66	— 10	13	7	30	—	76	58.7	17.3	57.5	55	SE. 1	3½	Clear	.22
67	— 4	13	7	23	+ 1	76.8	54.5	22.3	60.5	61	E. 1	3	Fair	(*)
66	— 8	14	6	28	—	75.8	55.2	20.6	58.3	57	N. 2	2½	Fair	.24
71	+ 1.5	11.5	7	20	+ 8	81	58.2	22.8	66.9	79	SE. 2	3½	Cloudy	.05
75	+ 1	11	8	20	+ 4	86.2	65.7	20.5	70	74	NE. 1	1½	Clear	.26
71	— 4	6	6	16	—	81.8	65.7	16.1	69.5	90	S. 4	5½	Cloudy	2.59
82	+ 5	13	5	23	+13	93.5	70	23.5	73.5	67	SW. 4	5½	Clear	.28
81	— 3	9	11	23	— 5	91.3	72.2	21.1	73.2	66	SW. 3	4½	Fair	.03
78	— 5	11	6	22	—	87.7	66.2	18.5	66.2	53	NE. 1	4	Fair	.30
2123	+ 11.5	320	207	637	+66	2408.4	1867.4	541	1957.7	2180	99½	123½	—	5.71
70.7	—118.5				—60	80.2	62.2	18	65.8	72.7	3.3	4.1		

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• TABLE XII.—*Still-births, legitimacy, period of utero-gestation, by whom reported or attended, and cause of, year ending June 30, 1881.*

	White.		Colored.		Total
	Male.	Female.	Male.	Female.	
Legitimacy:					
Legitimate	63	62	74	60	259
Illegitimate	8	8	50	29	95
Unknown color					7
Total	71	70	124	89	373
Period of utero-gestation:					
Fourth month	2	1	6	4	13
Fifth month	1	3	9	3	16
Sixth month	4	8	15	15	42
Seventh month	5	9	20	8	42
Eighth month	8	6	15	13	42
Ninth month	46	40	52	47	185
Unknown and not given	5	3	7	8	23
By whom reported:					
Physicians	52	53	45	33	183
Midwives	12	12	56	49	129
Coroner	7	5	23	16	51
Causes of:					
Unknown and not stated	33	41	78	63	215
Disease of mother	4	2	6	2	14
Overwork and injury to mother	4	4	18	17	43
Craniotomy	3	1	.....	1	5
Protracted and difficult labor	12	3	2	2	19
Placenta previa	4	1	.....	1	6
Disease of fetus	8	2	1	1	12
Premature birth .....	.....	4	10	2	16
Mal-presentation .....	.....	2	1	.....	3
Breech presentation	2	3	.....	.....	5
Shoulder presentation	1	1	.....	.....	2
Prolapsed funis	2	4	7	4	17
Puerperal convulsions .....	.....	.....	.....	1	1
Neglect at birth .....	.....	.....	1	2	3
Contracted pelvis	2	1	.....	.....	3
Uterine hemorrhage .....	.....	1	.....	2	3
Cord around neck	1	.....	.....	.....	1

NOTE.—The 7 of unknown color were reported by the coroner. The certificate in 1 case, male colored, gave weight of fetus as 25 pounds.

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TABLE XIII.—BIRTHS.—*Statement by months and quarters for the year ending June 30, 1881.*

Months and quarters.	White.		Colored.		Total white and colored.	Twins.		Bastards.	
	Male.	Female.	Male.	Female.		White.	Colored.	White.	Colored.
July, 1880	84	103	80	70	337	1	1	5	32
August, 1880	84	89	73	64	310	5	3	3	32
September, 1880	103	117	69	69	357	1	.....	2	26
Total first quarter	270	309	222	203	1,004	7	4	10	90
October, 1880	100	76	74	65	215	.....	1	4	31
November, 1880	126	92	72	76	366	3	2	7	33
December, 1880	74	64	64	42	244	.....	.....	1	11
Total second quarter	300	232	210	183	925	3	3	12	75
January, 1881	102	89	79	83	353	1	2	4	26
February, 1881	85	56	50	63	254	.....	.....	2	26
March, 1881	86	76	72	72	306	1	2	13	34
Total third quarter	273	221	201	218	913	2	4	19	86
April, 1881	68	68	68	70	274	1	.....	4	19
May, 1881	82	75	57	49	263	.....	2	6	21
June, 1881	63	53	47	53	216	.....	1	2	16
Total fourth quarter	213	196	172	172	753	1	3	12	56
Total for the year	1,056	958	805	776	3,595	13	14	53	307

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TABLE XIV.—BIRTHS.—*Nativities of parents of legitimate white children, reported, year ending June 30, 1881.*

Birthplaces of fathers.	Birthplaces of mothers.										
	United States.	British America.	Ireland.	England, Scotland, and Wales.	Germany, Austria, and Holland.	Poland.	France.	Switzerland.	Italy.	All other countries and unknown.	Total.
United States	1,379	5	39	21	18	.....	2	1	.....	.....	1,465
British America	5	.....	1	.....	.....	.....	.....	.....	.....	.....	6
Ireland	40	1	55	8	.....	.....	.....	.....	.....	1	105
England, Scotland, and Wales	38	.....	5	12	1	.....	.....	.....	.....	.....	56
Germany, Austria, and Holland	62	.....	18	2	75	.....	.....	.....	.....	.....	157
Poland .....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	2
France	4	.....	1	.....	.....	.....	2	.....	.....	.....	7
Switzerland	1	.....	.....	.....	2	.....	.....	.....	.....	.....	3
Italy	8	.....	2	.....	1	.....	.....	.....	7	.....	13
All other countries and unknown	10	.....	1	.....	.....	.....	.....	.....	.....	8	19
Total	1,547	6	122	48	97	2	4	1	7	9	1,588

TABLE XV.—BIRTHS.—*Number of births and twin-births, &c., reported, year ending June 30, 1881.*

Color.	Number of births.			Sex of twins.				By whom reported.			
	Males.	Females.	Total.	Males.	Females.	Male and female.	Total.	Physicians.	Midwives.	Unattended.	Total accouchements.
White	1,056	958	2,014	5	3	3	11	1,159	844	.....	2,003
Colored	805	776	1,581	4	4	5	13	308	1,280	1,588
Total	1,861	1,734	3,595	9	7	8	24	1,467	2,104	3,571

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TABLE XVII.—BIRTHS.—*Nationality of mothers of illegitimate children (reported), year ending June 30, 1881.*

Nationality of mothers.	Number of children.										Total number of mothers.	Total number of children.
	1.	2.	3.	4.	5.	6.	7.	8.	9.	15.		
United States (white).....	34	8									37	37
Ireland.....		1									1	1
England.....	1										1	1
Germany.....	3										3	3
Colored mothers.....	156	*88	*27	*23	6	5	2	1	2	1	306	306
Total.....	194	87	27	23	6	5	2	1	2	1	348	351

*1 pair of twins.

TABLE XVIII.—BIRTHS.—*Number of births (reported) in different hospitals, year ending June 30, 1881.*

Hospitals.	White.	Colored.	Total.
Columbia Hospital.....	57	65	122
Freedmen's Hospital.....	4	44	48
Washington Asylum Hospital.....	3	31	34
Saint Ann's Infant Asylum.....	9		9
Government Insane Asylum.....	1		1
Total.....	74	130	204

TABLE XIX.—MARRIAGES (REPORTED).—*Number of brides and grooms, year ending June 30, 1881.*

Number of marriages of grooms.	Number of marriages of brides.				Total.
	First marriage.	Second marriage.	Third marriage.	Not given.	
Whites:					
First marriage.....	396	25		6	427
Second marriage.....	53	23		2	78
Third marriage.....	2	2	1		5
Fourth marriage.....	1				1
Not given.....	4			46	50
Total.....	456	50	1	54	561
Colored:					
First marriage.....	166	27	1		194
Second marriage.....	27	16	1	1	45
Third marriage.....	2	4			6
Fourth marriage.....	1				1
Not given.....	1			4	5
Total.....	197	47	2	5	251

TABLE XX.—MARRIAGES (REPORTED).—*Nationality of brides and grooms of the white race, year ending June 30, 1881.*

Birthplaces of grooms.	Birthplaces of brides.						
	United States.	Ireland.	England, Scotland, and Wales.	Germany.	British America.	All other countries.	Total.
United States.....	441	8	4	8	1	1	456
Ireland.....	8	5					11
England, Scotland, and Wales.....	7					1	11
Germany.....	16			12			28
British America.....	1						1
All other countries.....	8					1	9
Not given.....	8					4	45
Total.....	487	8	4	18	1	7	561

TABLE XXI.—MARRIAGES (REPORTED).—*Ages of brides and grooms—whites—during the year ending June 30, 1881.*

Ages of grooms.	Ages of brides.							
	Under 20 years.	20 to 25 years.	25 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	Total.
Under 20 years.....	2							2
20 to 25 years.....	97	74	10	1	1			184
25 to 30 years.....	41	98	31	6	1			178
30 to 40 years.....	5	58	36	13	2			114
40 to 50 years.....	8	7	14	18	9			51
50 to 60 years.....			2	4	5			11
60 to 70 years.....				6	3			9
Over 70 years.....				1				1
Age not given.....								43
Total.....	118	287	98	49	20			561

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TABLE XXII.—MARRIAGES.—*Ages of brides and grooms—colored—reported during the year ending June 30, 1881.*

Ages of grooms.	Ages of brides.								
	Under 20 years.	20 to 25 years.	25 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	Over 70 years.	Age not given.
Under 20 years.....	28	46	0	1	.....	.....	.....	.....	.....
20 to 25 years.....	13	42	22	.....	.....	.....	.....	.....	2
25 to 30 years.....	2	19	9	11	3	1	.....	.....	.....
30 to 40 years.....	.....	1	.....	13	3	3	.....	.....	.....
40 to 50 years.....	.....	1	.....	5	1	.....	.....	.....	.....
50 to 60 years.....	.....	.....	.....	.....	2	.....	.....	.....	.....
Over 70 years.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Age not given.....	.....	.....	.....	.....	.....	.....	.....	.....	5
Total.....	43	109	40	36	14	4	.....	.....	5

TABLE XXIII.—MARRIAGES.—*Number of marriages (reported) solemnized by clergymen of different denominations, year ending June 30, 1881.*

	Methodist.	Baptist.	Catholic.	Episcopalian.	Presbyterian.	Lutheran.	German Evangelical.	Congregational.	German Reformed.	Hebrew.	Unitarian.	Disciple.	Swedishborgian.	Unknown.	Total.
White.....	163	41	58	152	69	17	25	11	3	9	3	4	3	4	341
Colored.....	108	123	1	12	5	.....	.....	2	.....	.....	.....	.....	.....	.....	241
White and colored.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Total.....	271	165	59	164	74	17	25	13	3	9	3	4	3	4	583

TABLE XXIV.—Deaths from September 1, 1874, to June 30, 1881, inclusive, by ages and nationalities.

Age, color, and sex.	District of Columbia.	New England.	Middle States.	West Virginia, Vir- ginia, and Maryland.	Other parts of the United States.	Ireland.	England, Scotland, and Wales.	Germany, Austria, and Holland.	All other countries, and unknown.	Totals.	Percentages to total deaths, by color and sex.	Total deaths, by color.	Mean annual death- rate, by color.	Total deaths by color, for the year ending June 30, 1881.	Annual death-rate by color, for the year ending June 30, 1881.
Under 5 years of age:															
White, male.....	2,697	5	31	86	37	1	1	1	9	2,862	37.20	5,551	7.290	698	5.75
White, female.....	2,528	6	29	88	38	1	1	1	1	2,699	38.54	5,551	7.290	698	5.75
Colored, male.....	2,854	1	16	112	10	1	1	1	1	2,998	58.54	7,778	20.670	980	15.85
Colored, female.....	3,578	6	6	74	16	1	1	1	1	3,690	51.38	7,778	20.670	980	15.85
5 to 10 years:															
White, male.....	287	2	19	80	23	1	2	1	2	316	4.11	642	.843	93	.775
White, female.....	261	5	11	96	8	1	1	1	3	326	4.67	642	.843	93	.775
Colored, male.....	223	3	1	44	3	1	1	1	1	274	4.02	538	1.571	72	1.165
Colored, female.....	246	1	3	53	6	1	1	1	1	309	4.31	538	1.571	72	1.165
10 to 20 years:															
White, male.....	178	7	26	68	21	13	2	4	2	309	4.02	625	.821	87	.717
White, female.....	196	4	23	63	17	8	2	4	2	316	4.53	625	.821	87	.717
Colored, male.....	111	6	6	150	6	1	3	1	3	274	4.02	603	1.867	81	1.31
Colored, female.....	225	2	4	166	20	1	1	1	1	319	5.85	603	1.867	81	1.31
20 to 30 years:															
White, male.....	281	19	71	107	45	29	9	29	16	506	7.36	1,207	1.565	183	1.50
White, female.....	279	18	66	157	41	50	8	16	8	641	9.19	1,207	1.565	183	1.50
Colored, male.....	84	1	8	267	30	1	1	1	1	311	7.49	1,205	3.246	201	3.253
Colored, female.....	122	1	3	546	21	1	1	1	1	694	9.69	1,205	3.246	201	3.253
30 to 40 years:															
White, male.....	163	23	122	119	63	139	32	74	21	767	9.96	1,428	1.862	233	1.92
White, female.....	176	21	78	177	38	108	14	23	16	681	9.47	1,428	1.862	233	1.92
Colored, male.....	69	2	7	310	36	1	1	1	1	425	6.23	971	2.616	156	2.524
Colored, female.....	83	1	5	486	21	1	1	1	1	546	7.63	971	2.616	156	2.524
40 to 50 years:															
White, male.....	115	51	120	138	57	173	33	120	32	839	10.90	1,378	1.810	240	1.979
White, female.....	104	24	53	142	26	111	17	62	10	539	7.73	1,378	1.810	240	1.979
Colored, male.....	62	2	4	285	24	1	1	1	1	369	5.41	690	1.869	110	1.779
Colored, female.....	96	2	3	251	12	1	1	1	1	321	4.48	690	1.869	110	1.779
50 to 60 years:															
White, male.....	79	42	89	124	33	153	33	105	23	696	9.04	1,205	1.523	206	1.698
White, female.....	78	22	53	167	20	107	17	86	9	569	7.30	1,205	1.523	206	1.698
Colored, male.....	21	1	1	276	30	1	1	1	1	289	4.04	609	1.641	88	1.423
Colored, female.....	45	1	1	238	6	1	1	1	1	289	4.04	609	1.641	88	1.423

TABLE XXIV.—Deaths from September 1, 1875, to June 30, 1881, inclusive, by ages and nativities—Continued.

Age, color, and sex.	District of Columbia.	New England.	Middle States.	West Virginia, Vir- ginia, and Maryland.	Other parts of the United States.	Ireland.	England, Scotland, and Wales.	Germany, Austria, and Holland.	All other countries.	Totals.	Percentages to total deaths, by color and sex.	Total deaths, by color.	Mean annual death- rate, by color.	Total deaths by color, for the year ending June 30, 1881.	Annual death-rate by color, for the year ending June 30, 1881.
60 to 70 years:															
White, male.....	66	51	111	169	25	123	32	74	23	676	8.76	1,189	1.562	217	1.788
White, female.....	78	82	55	175	16	96	20	36	6	513	7.35	1,189	1.562	217	1.788
Colored, male.....	16	1	3	211	9	228	2	2	1	228	2.49	515	1.367	68	1.10
Colored, female.....	32	1	3	230	10	228	2	2	2	277	3.87	515	1.367	68	1.10
70 to 80 years:															
White, male.....	23	46	62	158	16	79	25	43	13	475	6.17	979	1.236	174	1.494
White, female.....	71	52	64	190	13	66	23	44	12	594	7.22	979	1.236	174	1.494
Colored, male.....	20	1	1	208	8	237	2	2	2	237	2.47	550	1.432	91	1.472
Colored, female.....	21	1	3	264	4	237	2	2	2	313	4.37	550	1.432	91	1.472
80 to 90 years:															
White, male.....	4	14	17	61	2	30	18	15	5	166	2.16	394	.518	61	.562
White, female.....	20	21	25	92	3	44	14	5	3	228	2.27	394	.518	61	.562
Colored, male.....	21	1	1	123	6	123	2	2	1	123	2.02	333	.897	51	.825
Colored, female.....	21	1	1	168	6	123	2	2	1	195	2.72	333	.897	51	.825
90 to 100 years:															
White, male.....	1	4	2	7	1	2	1	1	1	20	.26	66	.090	13	.010
White, female.....	2	1	3	23	1	12	2	2	1	46	.66	66	.090	13	.010
Colored, male.....	3	3	3	36	1	1	1	1	1	22	.47	96	.237	20	.032
Colored, female.....	3	3	3	60	1	1	1	1	1	64	.90	96	.237	20	.032
100 years and over:															
White, male.....	1	1	1	1	1	2	1	1	1	2	.04	8	.010	6	.09
White, female.....	1	1	1	9	1	5	1	1	1	10	.15	65	.175	6	.09
Colored, male.....	1	1	1	54	1	1	1	1	1	55	.77	65	.175	6	.09
Colored, female.....	1	1	1	54	1	1	1	1	1	55	.77	65	.175	6	.09
Total white males.....	2,797	274	671	1,067	323	764	196	487	146	7,695	100.00	14,672	19.27	2,205	18.18
Total white females.....	2,792	175	459	1,311	250	608	117	227	68	6,977	100.00	14,672	19.27	2,205	18.18
Total colored males.....	4,454	11	43	2,152	153	123	1	1	8	6,821	100.00	13,938	37.87	1,931	31.25
Total colored females.....	4,453	12	29	2,560	122	123	1	1	6	7,162	100.00	13,938	37.87	1,931	31.25

NOTE.—One death of female, color unknown, not in the above table.

TABLE XXV.—*Conjugal relations of decedents from September 1, 1874, to June 30, 1881.*

Social relation, color, and sex.	Ages in years.									Total.	Percentage of each to grand total of each.
	20 to 29.	30 to 40.	40 to 50.	50 to 59.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 and over.		
Married:											
White, male.....	129	398	542	478	436	261	54	8	0	2,306	54.80
female.....	350	454	342	257	158	60	11	15	0	1,647	45.17
Colored, male.....	140	252	273	239	171	154	64	17	4	1,314	57.63
female.....	328	377	173	134	88	45	23	0	0	1,168	42.41
Widowers and widows:											
White, male.....	6	25	68	84	144	162	98	9	3	599	14.23
female.....	20	77	140	211	294	375	182	27	5	1,331	36.53
Colored, male.....	12	87	25	45	42	65	67	14	6	313	13.73
female.....	29	79	117	131	156	247	164	64	52	1,039	87.78
Single:											
White, male.....	418	318	196	112	84	46	12	3	0	1,189	28.25
female.....	370	127	55	40	59	67	23	4	0	655	17.96
Colored, male.....	352	126	59	30	17	13	6	1	0	603	26.45
female.....	386	81	29	21	26	17	7	0	1	518	18.81
Unknown:											
White, male.....	13	26	33	22	12	6	2	0	0	114	2.71
female.....	1	3	2	1	2	2	3	0	0	13	.35
Colored, male.....	7	10	12	6	8	6	1	0	0	50	2.19
female.....	1	9	2	3	7	4	1	0	2	29	1.05
Grand totals:											
White, male.....	566	767	839	696	676	475	166	20	3	4,208	.....
female.....	641	661	539	509	513	504	228	46	5	3,646	.....
Colored, male.....	511	425	369	320	238	237	138	32	10	2,280	.....
female.....	604	546	321	289	277	313	195	64	55	2,754	.....

TABLE XXVI.—*Average ages of decedents and percentages to total mortality by ages from September 1, 1874, to June 30, 1881.*

Color and sex.	Total deaths.	Average ages.	Five years and over.			Twenty years and over.			Forty years and over.		
			Deaths.	Average ages.	Per cent. to total deaths.	Deaths.	Average ages.	Per cent. to total deaths.	Deaths.	Average ages.	Per cent. to total deaths.
White males	7,695	29.94	4,634	45.70	62.82	4,201	50.44	54.59	2,877	58.82	37.39
White females.....	6,977	29.77	4,287	45.21	61.46	3,647	51.06	52.27	2,345	62.49	33.61
Colored males.....	6,821	18.40	2,827	41.15	41.44	2,278	48.01	33.40	1,845	60.93	19.72
Colored females.....	7,162	21.01	3,481	41.08	48.60	2,753	47.64	38.44	1,513	64.66	21.12

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TABLE XXVII.—DEATHS.—Deaths from principal diseases, by age, sex, color and nativity from September 1, 1874, to June 30, 1881.

Diseases, ages, color, and sex.	District of Columbia.	New England.	Middle States.	West Virginia, Virginia, and Maryland.	Other parts of the United States.	Ireland.	England, Scotland, and Wales.	Germany, Austria, and Holland.	All other countries, and unknown.	Totals.
Tubercular, other than phthisis:										
5 years and over, white.....	{ male..... 36	8	8	7	10	5	7	1	82	
female..... 29	3	9	18	7	7	2	1	4	86	
5 years and over, colored.....	{ male..... 45		86	2				1	84	
female..... 39			80	8					72	
Diarrheal diseases:										
10 years and over, white.....	{ male..... 17	9	16	32	12	82	6	15	5	144
female..... 32	3	9	47	4	23	6	6	2	122	
10 years and over, colored.....	{ male..... 4		56	4					64	
female..... 15	1		52	3				1	71	
Typhoid fever:										
All ages, white.....	{ male..... 71	5	16	41	11	11	2	17	4	178
female..... 73	6	14	33	10	20	5	13	8	177	
All ages, colored.....	{ male..... 48	1	3	64	2				118	
female..... 41	1		57	4				1	164	
Malarial fever:										
All ages, white.....	{ male..... 75	9	21	17	5	15	6	13	5	166
female..... 62	4	10	21	5	19	3			134	
All ages, colored.....	{ male..... 82		2	53	1				188	
female..... 82			56	1					139	
Syphilis:										
All ages, white.....	{ male..... 14	1	3	2	2	5			27	
female..... 15			3	1	1			1	21	
All ages, colored.....	{ male..... 43		1	18	1				58	
female..... 26			6	3					35	
Alcoholism:										
All ages, white.....	{ male..... 15	1	5	11	3	29	3	10	2	79
female..... 2			6		7		1	4	20	
All ages, colored.....	{ male..... 4			12	1				17	
female..... 2			3						5	
Apoplexy, paralysis, and softening of brain:										
All ages, white.....	{ male..... 45	31	67	99	16	54	25	36	19	392
female..... 32	18	34	97	8	45	11	23	5	273	
All ages, colored.....	{ male..... 22			135	11				166	
female..... 29		8	183	8					223	
Sunstroke:										
All ages, white.....	{ male..... 5	1	2	2	1	5		5	1	22
female..... 2	1				2			2	7	
All ages, colored.....	{ male..... 2			4	1				4	
female..... 2			4							
Acute diseases of the nervous system:										
10 years and over, white.....	{ male..... 18	12	14	29	9	16	9	8	2	117
female..... 26	3	14	21	3	9	3	3	1	83	
10 years and over, colored.....	{ male..... 7		1	40	3				51	
female..... 18			31						49	
Insanity:										
All ages, white.....	{ male..... 18	28	43	15	30	61	11	60	15	276
female..... 18	8	9	16	4	8	3	8	1	65	
All ages, colored.....	{ male..... 6		1	25	5		3	8	37	
female..... 7			19	2					38	
Rheumatism, including heart complications:										
All ages, white.....	{ male..... 21	4	11	14	1	11	2	9	1	74
female..... 25	2	4	19	2	6	1	3		62	
All ages, colored.....	{ male..... 11			35	2				48	
female..... 10		1	32	2					45	
Diseases of the heart, its membranes and valves:										
All ages, white.....	{ male..... 62	19	39	59	14	44	6	24	7	274
female..... 52	15	33	67	4	30	5	17	5	228	
All ages, colored.....	{ male..... 36		2	125	8				172	
female..... 29		1	146	5				1	181	
Aneurisms:										
All ages, white.....	{ male..... 3	3	5	4	1	4	2	5	1	29
female..... 1									1	
All ages, colored.....	{ male..... 3		2	14					30	
female..... 1			5	1					6	
Angina pectoris:										
All ages, white.....	{ male..... 4	1	9	8	2	1		3	26	
female..... 1		2	5		1	1	1		11	
All ages, colored.....	{ male..... 4			7	1				5	
female..... 1									7	

TABLE XXVII.—DEATHS.—Deaths from principal diseases, &c.—Continued.

Diseases, ages, color, and sex.		District of Columbia.	New England.	Middle States.	West Virginia, Virginia, and Maryland.	Other parts of the United States.	Ireland.	England, Scotland, and Wales.	Germany, Austria, and Holland.	All other countries, and unknown.	Totals.
Pneumonia and bronchitis:											
5 years and over, white.....	{ male.....	73	27	49	86	12	62	23	39	8	379
	{ female.....	68	16	41	105	11	47	15	22	2	327
5 years and over, colored.....	{ male.....	45	6	6	133	11	.....	.....	.....	1	256
	{ female.....	61	.....	1	166	7	.....	.....	.....	1	236
Diseases of stomach:											
10 years and over, white.....	{ male.....	13	3	6	20	4	16	5	7	.....	74
	{ female.....	10	3	4	19	.....	13	4	4	1	67
10 years and over, colored.....	{ male.....	2	3	.....	16	1	.....	.....	.....	.....	21
	{ female.....	3	1	.....	19	.....	.....	.....	.....	.....	23
Diseases of liver:											
10 years and over, white.....	{ male.....	15	6	17	28	4	21	2	19	.....	112
	{ female.....	12	2	4	20	.....	14	2	4	.....	68
10 years and over, colored.....	{ male.....	3	.....	1	23	1	.....	.....	.....	.....	27
	{ female.....	3	.....	.....	16	.....	.....	.....	.....	.....	19
Diseases of intestines:											
10 years and over, white.....	{ male.....	31	2	8	19	5	16	4	13	3	101
	{ female.....	10	3	11	16	6	16	7	11	2	82
10 years and over, colored.....	{ male.....	5	.....	.....	35	1	.....	.....	.....	.....	41
	{ female.....	8	.....	2	35	2	.....	.....	.....	.....	47
Diseases of urinary organs:											
10 years and over, white.....	{ male.....	36	21	25	34	12	34	8	19	3	192
	{ female.....	22	6	10	19	2	11	3	3	.....	76
10 years and over, colored.....	{ male.....	17	.....	2	57	6	.....	.....	.....	.....	82
	{ female.....	11	.....	1	54	.....	.....	.....	.....	.....	66
Diseases of generative organs:											
All ages, white.....	{ male.....	.....	.....	.....	1	.....	2	.....	1	.....	4
	{ female.....	9	2	9	9	2	6	.....	5	.....	42
All ages, colored.....	{ male.....	.....	.....	.....	1	1	.....	.....	.....	.....	2
	{ female.....	7	.....	2	24	.....	.....	.....	.....	.....	33
Puerperal diseases:											
All ages, white.....	{ male.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	{ female.....	61	7	15	45	9	22	1	10	.....	170
All ages, colored.....	{ male.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	{ female.....	27	.....	.....	134	3	.....	.....	.....	.....	164
Suicides:											
All ages, white.....	{ male.....	6	2	6	4	6	2	3	11	4	44
	{ female.....	3	1	2	1	1	1	.....	3	1	13
All ages, colored.....	{ male.....	1	.....	.....	1	.....	.....	.....	.....	.....	2
	{ female.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dropsies:											
10 years and over, white.....	{ male.....	11	.....	5	8	1	3	.....	6	1	35
	{ female.....	10	4	3	7	1	5	6	3	.....	38
10 years and over, colored.....	{ male.....	3	.....	.....	27	2	.....	.....	.....	.....	32
	{ female.....	11	.....	.....	31	1	.....	.....	.....	.....	43
Epilepsy:											
All ages, white.....	{ male.....	10	1	12	6	11	7	2	6	.....	55
	{ female.....	8	.....	2	11	2	1	1	.....	.....	25
All ages, colored.....	{ male.....	6	.....	.....	11	3	.....	.....	.....	1	21
	{ female.....	5	.....	.....	15	4	.....	.....	.....	.....	24

TABLE XXVIII.—DEATHS.—Deaths from *phthisis pulmonalis*, from September 1, 1874, to June 30, 1881.

Ages, color, and sex.	District of Columbia.			New England.			Middle States.			West Virginia, Virginia, and Maryland.			Other parts of the United States.			Ireland.			England, Scotland, and Wales.			Germany, Austria, and Holland.			All other countries and unknown.			Total.		
	Number of deaths.	Number of insane.	Number complicated with hemorrhage.	Number of deaths.	Number of insane.	Number complicated with hemorrhage.	Number of deaths.	Number of insane.	Number complicated with hemorrhage.	Number of deaths.	Number of insane.	Number complicated with hemorrhage.	Number of deaths.	Number of insane.	Number complicated with hemorrhage.	Number of deaths.	Number of insane.	Number complicated with hemorrhage.	Number of deaths.	Number of insane.	Number complicated with hemorrhage.	Number of deaths.	Number of insane.	Number complicated with hemorrhage.	Number of deaths.	Number of insane.	Number complicated with hemorrhage.	Number of deaths.	Number of insane.	Number complicated with hemorrhage.
Under 20 years of age:																														
White, male.....	65	5	1	6	8	1	6	8	1	16	1	1	5	5	1	4	4	1	1	1	1	1	1	1	1	1	98	11	6	
Colored, male.....	101	8	1	2	2	1	2	2	1	21	3	1	2	2	1	3	3	1	3	3	1	5	1	1	1	1	140	13	4	
White, female.....	279	6	1	3	3	1	3	3	1	77	4	1	9	9	1	3	3	1	1	1	1	1	1	1	1	1	361	23	10	
Colored, female.....	377	8	1	3	3	1	3	3	1	141	1	1	24	24	1	24	24	1	4	4	1	10	1	1	1	1	534	33	13	
20 to 30 years:																														
White, male.....	135	1	8	7	11	1	28	1	1	53	1	1	24	24	1	24	24	1	2	2	1	10	1	1	1	1	302	11	13	
Colored, male.....	168	1	5	4	4	1	4	4	1	83	12	1	24	24	1	25	25	1	2	2	1	5	1	1	1	1	339	2	6	
White, female.....	47	1	1	2	2	1	2	2	1	212	1	11	11	11	1	11	11	1	1	1	1	1	1	1	1	1	277	2	13	
Colored, female.....	85	6	1	2	2	1	2	2	1	315	3	16	10	10	1	10	10	1	4	4	1	1	1	1	1	1	414	3	23	
30 to 40 years:																														
White, male.....	73	5	18	3	49	5	32	2	2	66	1	3	26	2	2	55	12	1	11	11	2	18	9	5	1	1	311	33	16	
Colored, male.....	66	1	1	5	32	2	32	2	1	76	1	1	14	14	1	14	14	1	8	8	1	17	5	1	1	1	270	1	6	
White, female.....	34	4	1	1	4	1	4	1	1	136	1	11	6	6	1	6	6	1	1	1	1	136	1	1	1	1	186	1	17	
Colored, female.....	29	2	2	2	2	2	2	2	1	198	2	11	6	6	1	6	6	1	1	1	1	1	1	1	1	1	235	2	14	
40 to 50 years:																														
White, male.....	46	2	15	1	32	2	2	2	2	28	1	3	16	3	1	39	1	2	13	13	3	27	2	6	7	1	284	9	18	
Colored, male.....	33	9	9	1	9	1	9	1	1	57	3	7	7	7	1	88	1	2	2	2	5	5	1	1	1	1	161	2	4	
White, female.....	13	2	10	1	10	1	10	1	1	101	9	6	6	6	1	6	6	1	1	1	1	101	1	1	1	1	120	1	12	
Colored, female.....	31	3	3	3	3	3	3	3	3	110	3	4	6	6	2	6	6	1	1	1	1	1	1	1	1	1	147	2	6	
50 to 60 years:																														
White, male.....	13	1	7	10	5	1	10	5	1	22	1	4	4	4	1	32	2	6	6	6	25	1	1	1	1	1	123	4	1	
Colored, male.....	18	1	3	5	1	1	5	1	1	35	1	4	5	5	1	27	3	3	3	4	4	4	1	1	1	1	100	3	5	
White, female.....	8	1	1	1	1	1	1	1	1	78	1	5	4	4	1	31	1	1	1	1	1	1	1	1	1	1	91	1	6	
Colored, female.....	6	1	2	2	2	2	2	2	2	61	5	5	3	3	1	30	15	4	4	4	4	4	4	4	4	4	69	1	7	
60 to 70 years:																														
White, male.....	9	5	5	10	2	1	10	2	1	24	3	3	3	3	1	20	4	4	4	4	1	6	1	1	1	1	82	1	3	
Colored, male.....	12	4	4	2	2	2	2	2	2	30	3	3	1	1	1	15	4	4	4	4	4	4	4	4	4	4	73	2	2	
White, female.....	1	1	1	1	1	1	1	1	1	31	3	3	3	3	1	15	4	4	4	4	4	4	4	4	4	4	86	1	3	
Colored, female.....	10	1	1	1	1	1	1	1	1	31	3	3	3	3	1	15	4	4	4	4	4	4	4	4	4	4	42	1	3	



[illegible]

TABLE XXIX.—DEATHS.—Deaths from phthisis pulmonalis, and total deaths from all causes, with percentages, from September 1, 1874, to June 30, 1881.

Age.	White.						Colored.					
	Male.			Female.			Male.			Female.		
	Deaths from phthisis pulmonalis.	Percentage to total deaths from phthisis.	Total deaths from all causes.	Deaths from phthisis pulmonalis.	Percentage to total deaths from phthisis.	Total deaths from all causes.	Deaths from phthisis pulmonalis.	Percentage to total deaths from phthisis.	Total deaths from all causes.	Deaths from phthisis pulmonalis.	Percentage to total deaths from phthisis.	Total deaths from all causes.
Under 5 years of age.....	36	3.05	2,922	38	3.39	2,690	211	19.23	3,993	241	16.27	3,680
5 to 10 years.....	11	3.48	323	8	8.39	326	50	4.56	274	70	4.73	309
10 to 20 years.....	51	4.33	309	99	8.93	316	100	9.12	274	223	15.06	419
20 to 30 years.....	302	25.61	566	339	30.24	641	277	25.25	511	414	27.95	694
30 to 40 years.....	311	24.38	767	270	24.09	661	186	16.96	425	235	15.87	646
40 to 50 years.....	234	19.45	839	161	14.36	539	120	10.84	369	147	9.83	321
50 to 60 years.....	123	10.43	696	177	8.92	509	91	8.29	320	60	4.66	269
60 to 70 years.....	82	6.96	676	73	6.51	513	36	3.28	238	42	2.84	277
70 to 80 years.....	26	2.21	475	32	2.86	504	19	1.73	237	30	2.02	313
80 years and over.....	8	.25	189	6	.53	279	7	.64	180	10	.67	314
Totals.....	1,179	100.00	7,695	1,121	100.00	6,977	1,097	100.00	6,821	1,481	100.00	7,162
Total deaths from phthisis, by color.....	2,300						2,578					
Mean annual death-rate from phthisis, by color.....	3.02						3.64					
Total deaths from all causes, by color.....	14,672						13,983					
Mean annual death rate from all causes, by color.....	18.27						37.67					

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TABLE XXXI.—DEATHS.—Percentages of deaths of colored from phthisis pulmonalis to total deaths from all causes from September 1, 1874, to June 30, 1881.

Ages.	Total.
Under 20 years of age	10.00
20 to 30 years	57.34
30 to 40 years	43.35
40 to 50 years	38.00
50 to 60 years	26.57
60 to 70 years	15.14
70 to 80 years	8.90
80 years and over	2.44
Percentage of deaths from phthisis to total deaths	18.43

TABLE XXXII.—Deaths from cancers by color, sex, and nativities from September 1, 1874, to June 30, 1881.

Cancer of—		Nativities.									Total.
		District of Co- lumbia.	New England.	Middle States.	Maryland, Vir- ginia, and West Virginia.	Other parts of United States.	Ireland.	England.	Germany.	Other foreign countries.	
Breast:											
White	{ male										
	{ female	10	8	3	15	5	8	1	2	51	
Colored	{ male				15					15	
	{ female	3									
Uterus:											
White	{ male										
	{ female	14	8	22	23	6	14	1	4	94	
Colored	{ male										
	{ female	9			57	3				69	
Ovary:											
White	{ male										
	{ female	4	1	1			2		1	9	
Colored	{ male										
	{ female				2					2	
Stomach:											
White	{ male	4	3	2	8		9	2	9	35	
	{ female	6	3	1	6	2	5	1	4	30	
Colored	{ male	1			5					6	
	{ female	4		1	13					19	
Liver:											
White	{ male		1		1		1		2	7	
	{ female	1	1	3	1			2	3	12	
Colored	{ male				2					2	
	{ female				2					2	
Abdominal organs:											
White	{ male		1		3				2	7	
	{ female	4	2	2	4	2		2		16	
Colored	{ male				4					4	
	{ female	1			8					9	
Face and head:											
White	{ male	4	1	3	6	2	3			20	
	{ female	4		1	4	1	1		2	13	
Colored	{ male	1			1					2	
	{ female				3					3	
Mouth and its contents:											
White	{ male	4	1	1	3		1	1		12	
	{ female		1		1		1			3	
Colored	{ male				1					1	
	{ female				1					1	
Rectum:											
White	{ male	1	1	1	1			1		5	
	{ female	4	1	2	1		1		1	10	
Colored	{ male										
	{ female				1					1	
All others:											
White	{ male	3	1	3	4	1				12	
	{ female	3		1	5		2		1	13	
Colored	{ male	1			4					5	
	{ female	1		1	6	1				9	
Totals:											
White	{ male	16	9	10	26	3	14	4	13	104	
	{ female	50	20	36	60	16	84	7	18	261	
Colored	{ male	3			19					22	
	{ female	18		2	88	4				112	

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TABLE XXXIII.—Deaths from cancers by color, sex, ages, &c., from September 1, 1874, to June 30, 1881.

Cancer of—	Under 20 years.		20 to 30 years.		30 to 40 years.		40 to 50 years.		50 to 60 years.							
	W.		C.		W.		C.		W.		C.					
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.				
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.				
Breast.....					1	3	1		15		3		14		5	
Uterus.....				3		2	20	12	27		11		21		11	
Ovary.....							1	1	2				2		1	
Stomach.....				1	2	2	1	2	1	5	2	1	14	6	1	3
Liver.....							2	2	1	5			3	1	1	
Abdominal organs.....		2		1	1	1	1	2	1	1	2	1	2	1	1	
Face and head.....	1			1					8		1		1	5	1	
Mouth and its contents.....	1		1			1			2	1			2	2	1	
Rectum.....				1	3		1	2	1				1	2	1	
All others.....	3	1	1		1			2	4	2		5	2	4	1	
Totals.....	5	3	2	3	9	4	5	31	21	60	4	21	26	61	24	

Cancer of—	60 to 70 years.				70 to 80 years.				80 years and over.				Totals.				Percentage to total deaths from cancers.	
	W.		C.		W.		C.		W.		C.		W.		C.			
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.		Total.
Breast.....	...	9	...	5	...	6	...	3	...	...	1	2	...	47	2	18	67	13.96
Uterus.....	...	29	...	5	...	2	...	7	...	1	...	1	...	94	...	49	143	29.67
Ovary.....	9	4	...	...	...	...	...	...	...	...	...	...	...	9	...	2	11	2.28
Stomach.....	9	3	1	6	...	6	8	...	4	1	...	2	38	30	6	18	93	19.06
Liver.....	3	2	...	...	...	1	2	1	1	...	...	7	12	2	2	23	4	4.77
Abdominal organs.....	3	3	...	2	...	...	...	1	...	...	...	1	7	16	4	9	36	7.47
Face and head.....	2	1	...	...	...	3	2	...	...	2	5	...	1	30	13	2	3	7.88
Mouth and its contents.....	3	1	...	...	...	2	2	...	...	1	...	...	12	3	1	1	17	3.53
Rectum.....	1	2	...	...	...	1	...	...	...	...	...	...	5	10	...	1	16	3.32
All others.....	3	5	...	1	...	1	1	1	1	...	12	13	5	9	39	8.09
Totals.....	23	54	1	19	14	23	2	17	4	6	2	8	101	247	22	112	482	100.00

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TABLE XXXIV.—*Number of deaths from cancers by color, sex, age; total number of deaths from all causes; number of deaths from all causes to 1 from cancer, and number of deaths from cancers to each 1,000 deaths from all causes from September 1, 1874, to June 30, 1881.*

Color and sex.	Under 20 years.				20 to 30 years.			
	Deaths from cancers.	Total deaths from all causes.	Number of deaths from all causes to 1 from cancer.	Number of deaths from cancers to 1,000 from all causes.	Deaths from cancers.	Total deaths from all causes.	Number of deaths from all causes to 1 from cancer.	Number of deaths from cancers to 1,000 from all causes.
White males.....	5	3,487	687	1.4	3	506	189	5.1
White females.....	8	3,331	1,110	.9	9	641	71	14.9
Total white.....	8	6,818	852	1.2	12	1,207	101	8.9
Colored males.....	2	4,541	2,270	.4	4	511	103	7.8
Colored females.....	2	4,408	.....	.....	5	694	139	7.2
Total colored.....	2	8,949	4,475	.2	9	1,205	134	7.5
Grand total.....	10	15,767	1,577	.6	21	2,412	115	8.7

Color and sex.	30 to 40 years.				40 to 50 years.			
	Deaths from cancers.	Total deaths from all causes.	Number of deaths from all causes to 1 from cancer.	Number of deaths from cancers to 1,000 from all causes.	Deaths from cancers.	Total deaths from all causes.	Number of deaths from all causes to 1 from cancer.	Number of deaths from cancers to 1,000 from all causes.
White males.....	5	767	153	6.5	21	889	40	25.4
White females.....	31	661	21	46.9	60	539	9	111.1
Total white.....	36	1,428	40	25.2	81	1,378	17	58.1
Colored males.....	2	425	213	4.4	4	369	92	16.4
Colored females.....	18	546	30	33.0	21	321	15	63.4
Total colored.....	20	971	49	20.6	25	699	28	34.1
Grand total.....	56	2,399	43	23.3	106	2,068	20	51.1

TABLE XXXIV.—Number of deaths from cancers by color, sex, age, &c.—Continued.

Color and sex.	50 to 60 years.				60 to 70 years.			
	Deaths from cancers.	Total deaths from all causes.	Number of deaths from all causes to 1 from cancer.	Number of deaths from cancers to 1,000 from all causes.	Deaths from cancers.	Total deaths from all causes.	Number of deaths from all causes to 1 from cancer.	Number of deaths from cancers to 1,000 from all causes.
White males.....	26	696	27	37.4	23	676	29	34.6
White females.....	61	500	8	119.8	54	513	9	103.9
Total white.....	87	1,205	14	72.2	77	1,189	15	64.6
Colored males.....	5	320	64	15.6	1	238	288	4.2
Colored females.....	24	289	12	83.0	19	277	15	62.6
Total colored.....	29	609	21	47.6	20	515	26	38.9
Grand total.....	116	1,814	16	63.9	97	1,704	18	56.9

Color and sex.	70 to 80 years.				80 years and over.			
	Deaths from cancers.	Total deaths from all causes.	Number of deaths from all causes to 1 from cancer.	Number of deaths from cancers to 1,000 from all causes.	Deaths from cancers.	Total deaths from all causes.	Number of deaths from all causes to 1 from cancer.	Number of deaths from cancers to 1,000 from all causes.
White males.....	14	475	34	29.5	4	189	47	21.2
White females.....	23	504	22	45.6	6	279	46	21.6
Total white.....	37	979	26	37.8	10	468	47	21.4
Colored males.....	2	237	119	8.4	2	180	90	11.1
Colored females.....	17	313	18	54.3	8	314	80	25.5
Total colored.....	19	550	30	34.5	10	494	49	20.2
Grand total.....	56	1,529	27	36.5	20	962	48	20.8

TABLE XXXIV.—*Number of deaths from cancers by color, sex, age, &c.*—Continued.

Color and sex.	Total all ages.				Total 20 years and over.			
	Deaths from cancer.	Total deaths from all causes.	Number of deaths from all causes to 1 from cancer.	Number of deaths from cancers to 1,000 from all causes.	Deaths from cancer.	Total deaths from all causes.	Number of deaths from all causes to 1 from cancer.	Number of deaths from cancers to 1,000 from all causes.
White males	101	7,696	7,619	13.1	96	4,208	44	22.1
White females	247	6,977	28	35.4	244	3,646	15	69.7
Total white	348	14,672	42	23.7	340	7,854	23	43.3
Colored males	22	6,821	310	3.2	20	2,280	114	8.8
Colored females	112	7,162	64	15.6	112	2,754	25	49.7
Total colored	134	13,983	104	9.6	132	5,034	38	26.3
Grand total	482	28,655	59	16.8	472	12,888	37	36.6

TABLE XXXV.—Average ages, in years, of decedents from cancers.

Cancer of—	White.							
	Males.				Females.			
	Married.	Widowers.	Single.	Total.	Married.	Widows.	Single.	Total.
Breast .....	.....	.....	.....	.....	48	59	60.3	54
Uterus .....	.....	.....	.....	.....	48.2	57	50	49
Ovary .....	.....	.....	.....	.....	51.4	65	.....	54.3
Stomach	57	64.7	56.6	57.7	55	68	49.5	58.8
Liver	55.6	69	57	58	44	59	61.5	52
Abdominal organs	60	52	40	55	49	60.5	38	48
Face and head	53.4	75.4	34	54.8	67	71.5	79	70.5
Mouth and its contents	60.4	65	30	56	69	74	80	66
Rectum	46.4	.....	71	50.4	39	60	30	39
All others	58	48	18	43.8	54.5	62	43	55.6
All cancers	55.8	66.7	40.6	54.5	48.5	61.8	49.3	52.2

Cancer of—	Colored.							
	Males.				Females.			
	Married.	Widowers.	Single.	Total.	Married.	Widows.	Single.	Total.
Breast .....	.....	91	31	61	56	67.8	.....	61.8
Uterus .....	.....	.....	.....	.....	45	57.5	34	50.3
Ovary .....	.....	.....	.....	.....	35	56	.....	47
Stomach	41.5	.....	.....	41.5	49	68	50	61.6
Liver	63.5	.....	.....	63.5	.....	68	70	78.5
Abdominal organs	40.5	54	28	40.8	45	70	60	55
Face and head	54	.....	42	48	50	68	50	61
Mouth and its contents .....	.....	.....	19	19	55	.....	.....	55
Rectum	33	33
All others	78	18	51	39.5	44	68	48.4
All cancers	52	72.5	26	47	45.3	62.6	50	52.8

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TABLE XXXVI.—Deaths from cancers, by ages, &c., from September 1, 1874, to June 30, 1881.

Ages.	White.				Colored.			
	Male.		Female.		Male.		Female.	
	Deaths from cancers.	Percentage to total deaths of white males from cancers.	Deaths from cancers.	Percentage to total deaths of white females from cancers.	Deaths from cancers.	Percentage to total deaths of colored males from cancers.	Deaths from cancers.	Percentage to total deaths of colored females from cancers.
Under 20 years of age.....	5	4.0	3	1.2	2	9.1	.....	.....
20 to 30 years.....	3	2.0	9	3.6	4	12.2	.....	4.5
30 to 40 years.....	5	4.0	31	12.5	2	9.1	18	18.1
40 to 50 years.....	21	20.8	60	24.3	4	12.2	21	18.7
50 to 60 years.....	26	25.8	61	24.7	5	22.7	24	21.4
60 to 70 years.....	23	22.8	54	21.9	1	4.5	19	16.9
70 to 80 years.....	14	13.9	23	9.4	2	8.1	17	15.2
80 and over.....	4	4.0	6	2.4	2	8.1	8	7.2
Total.....	101	100	247	100	22	100	112	100
Percentage to total deaths from all causes by sex.....	1.31	.....	3.54	.....	.32	.....	1.56	.....
Percentage to total deaths from all causes by color..	2.37				.96			
Mean annual death-rate....	0.457				0.361			

TABLE XXXVII.—Deaths from cancers among white females from September 1, 1874, to June 30, 1881.

Cancer of—	Married.		Widows.		Single.		Total deaths from cancers.	Percentage to total deaths from cancers.
	Deaths from cancers.	Percentage to total deaths from cancers of married.	Deaths from cancers.	Percentage to total deaths from cancers of widows.	Deaths from cancers.	Percentage to total deaths from cancers of single.		
	Deaths from cancers.	Percentage to total deaths from cancers of married.	Deaths from cancers.	Percentage to total deaths from cancers of widows.	Deaths from cancers.	Percentage to total deaths from cancers of single.		
Breast.....	23	16.3	13	18.3	11	35.5	47	19.1
Uterus.....	66	46.3	23	32.4	4	12.9	93	38.2
Ovary.....	7	4.9	2	2.8	.....	.....	9	3.7
Stomach.....	12	8.6	11	15.5	7	22.6	30	12.4
Liver.....	6	4.3	4	5.6	2	6.5	12	4.9
Abdominal organs.....	7	4.9	4	5.6	3	9.7	14	5.6
Face and head.....	5	3.6	7	9.9	1	3.2	13	5.3
Mouth and its contents.....	2	1.4	1	1.4	.....	.....	3	1.3
Rectum.....	7	4.9	1	1.4	2	6.4	10	4.2
All others.....	6	4.3	5	7.1	1	3.2	12	4.9
Totals.....	141	100	71	100	31	100	243	100
Percentage to total number of married, of widows, and of single, dying of all diseases and 20 years and over of age.....	.....	8.56	.....	5.33	.....	4.73	.....	6.66

NOTE.—One case cancer of uterus 46 years of age, conjugal relation not given, and 3 cases (2 of "abdominal organs" and 1 of "all others") under 20 years of age, not included in this table.

TABLE XXXVIII.—Deaths from cancers among colored females from September 1, 1874, to June 30, 1881.

Cancer of—	Married.		Widows.		Single.		Total deaths from cancers.	Percentage to total deaths from cancers.
	Deaths from cancers.	Percentage to total deaths from cancers of married.	Deaths from cancers.	Percentage to total deaths from cancers of widows.	Deaths from cancers.	Percentage to total deaths from cancers of single.		
Breast	6	13.6	12	21.06	.....	.....	18	16.4
Uterus	21	47.7	24	42.10	3	53.4	48	48.7
Ovary	1	2.3	1	1.75	.....	.....	2	1.8
Stomach	4	9.1	12	21.06	2	22.2	18	16.8
Liver .....	.....	.....	1	1.75	1	11.1	2	1.8
Abdominal organs	5	11.3	3	5.3	1	11.1	9	8.2
Face and head	1	2.3	1	1.75	1	11.1	3	2.7
Mouth and its contents	1	2.3	.....	.....	.....	.....	1	.9
Rectum	1	2.3	.....	.....	.....	.....	1	.9
All others	4	9.1	3	5.3	1	11.1	8	7.8
Totals	44	100	57	100	9	100	110	100
Percentage to total number of married, of widows, and of single, dying of all diseases, and 20 years and over of age .....	.....	3.77	.....	5.49	.....	1.74	.....	3.99

NOTE.—One case cancer of uterus, age 41, and 1 case of "all others," age 75, conjugal relations not given, are not included in this table.

ADDITIONS TO THE LIBRARY.

The following-named works, reports, and papers have been added to our library during the year:

Dr. H. F. Parsons' Report to the Local Government Board on the Sanitary Condition of the Stonebridge Registration District and on the Late Prevalence of Scarlet Fever therein.

Dr. Parsons' Report to the Local Government Board on the Prevalence of Scarlet Fever and "Fever" in the Lilanely Urban Sanitary District.

Dr. H. F. Parsons' Report to the Local Government Board on the Prevalence of Enteric Fever in the Pontardame Rural Sanitary District, and on the General Sanitary Condition of the District.

Annual Report of the Supervising Surgeon-General of the Marine Hospital Service of the United States, 1880.

Tenth Annual Report of the City Registrar of Marriages, Births, and Deaths in the City of Albany, 1880.

Walsh's Retrospect for 1880.

Popular Science Monthly, 1881.

The Sanitarian, 1881.

Hygienic and Medical Reports by Medical Officers of the United States Army.

Annual Report of the Treasurer of the United States, 1880.

Annual Report of the Health Officer of the City and County of San Francisco, 1880.

First Annual Report of New York Sanitary Reform Society, 1880.

Annual Address of Ed. Fenner *et al.*, at Regular Meeting New Orleans Auxiliary Sanitary Association, 1880.

Remarks by C. B. White, M. D., Sanitary Director, upon "Disinfection."

Annual Report of the Board of Health of the City of Pittsburgh for the year 1879.

First Annual Report of the State Board of Health of South Carolina for the year ending October 31, 1880, and first half year ending October 31, 1879.

Commissioners' Report District of Columbia, 1879.

Mr. W. H. Powers' Report to the Local Government Board on Diphtheria, at the Hospital for Sick Children, Great Ormond street.

Dr. Ballard's Report to the Local Government Board upon an Epidemic Outbreak of Enteric Fever in the Village of Millbrook in the Rural Sanitary District of St. Germain, Cornwall.

The Indiana Medical Reporter, November, 1880.

Tenth Annual Report of the Board of Directors of Children's Hospital, 1881.

Third Annual Report of the Board of Health of the City of Augusta, Ga.

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- Third Annual Report of the State Board of Health for year ending November 30, 1890.
 Report of Analysis of Ohio River Water.
 Annual Report of the Health Officer of the City of Burlington, Vt., 1881.
 Annual Reports of the State Board of Health of Colorado, 1879 and 1880.
 Second Annual Report of the Board of Health of the Taxing District of Shelby County, Tennessee, 1880.
 Code of Sanitary Ordinances of the Board of Health of the City of Brooklyn, 1879.
 Statutes and Ordinances Governing the Health Department of Baltimore.
 Digest of Statutes and Ordinances Relating to the Public Health, 1873.
 House of Representatives, Document 199, Report on the Adulteration of Food.
 Fifth Annual Report of the Board of Health, City of Utica, N. Y., 1881.
 Annual Report of the Board of Health of City of Sacramento, Cal., 1881.
 Report of the Board of Health to the Citizens of Bridgewater, March, 1881.
 The Journal of Materia Medica, 1881.
 Report on Trichinae and Trichinosis, 1881, Ex. Doc. No. 9, 46th Congress.
 Fifteenth Report of the Board of Trustees of Public Schools of the District of Columbia, 1878 and 1879.
 Dr. Ballard's Report on an Acute Specific Disease, Characterized by a Peculiar Diarrhoea, Epidemic Among Persons who had Partaken of Refreshments Provided at a Sale on the Duke of Portland's Estate, at Welbeck, Notts.
 Dr. Ballard's Report to the Local Government Board on an Epidemic of Enteric Fever at Newlyn, in the Rural Sanitary District of St. Columb, Cornwall.
 Mr. John Spears' Report to the Local Government Board on the Sanitary Condition of Shadwell, in the Rural Sanitary District of Weatherby, Yorkshire.
 Dr. Airy's Report to the Local Government Board on Several Outbreaks of Diphtheria in the Fourth Quarter of 1879.
 Fourteenth Annual Report of the Board of Health, Dayton, Ohio, 1881.
 Eighth Annual Report of the Board of Health, 1880.
 Annual Report of the Board of Health and of the Vital Statistics of Lowell, Mass., 1880.
 Annual Report of the Board of Health, Charleston, S. C., 1881.
 Fourth Annual Report of the Board of Health of the State of New Jersey, 1880.
 Report of the Department of Health of the City of Chicago, 1879, 1880.
 Ninth Annual Report of the Local Government Board 1879, 1880, and Supplement containing Report of the Medical Officer for 1879.
 Third Annual Report of the Board of Health of the City of Somerville, Mass.
 Sixth Annual Report of the Health Officer of Hamilton, Ohio, 1881.
 The Hygiene of Emigrant Ships, by Thomas J. Turner, A. M., M. D., Ph. D., 1880.
 Report of the Committee on the Prevention of Venereal Diseases, American Public Health Association, 1880.
 Report of the Health Department, Toledo, Ohio, 1880.
 Fourteenth Annual Report of the Health Department, Cincinnati, Ohio, 1880.
 Eighth Annual Report of the Board of Health of the City of Boston, 1879, 1880.
 Statistical Tables of Births, Marriages, Deaths, &c., in Japan, Tokio, 1881.
 Third Annual Report of the State Board of Health of the State of Rhode Island, 1880.
 Report of Twenty Years' Experience in the Department of Physical Education and Hygiene in Amherst College, 1881.
 Annual Reports of City Officers of Aurora, Ill., 1881.
 Annual Report of the Board of Health, City of Cleveland, 1880.
 Report of the Board of Health of the State of Louisiana for 1880.
 First Annual Report of the State Board of Health of New York, 1881.
 Report of State Board of Health of New York on the Nuisances of Hunter's Point and Vicinity, 1881.
 Annual Report of the Board of Health of the City of Indianapolis, 1880.
 Third Annual Report of the Central Sanitary Bureau of the Home Department of Japan, 1881.
 United States Commission on Fish and Fisheries Reports for 1873, 1874, 1875, 1876, 1877, and 1878. 4 vols.
 Tenth Annual Report of the Local Government Board, London, England.
 Annual Report of the Board of Health of Richmond, Va.
 Transactions of the Medical Association of the State of Alabama, 1881.
 First Annual Report of the State Board of Health of New York, 1881.
 Eleventh Annual Report of the City Registrar of Marriages, Births, and Deaths in the City of Albany, 1881.
 Annual Report of the City Registrar, 1881, Boston.
 Health Officers' Annual Report, Philadelphia, 1880.
 Annual Report of the Health Department of the City and County of San Francisco, 1881, 1882.
 Thirty-ninth Registration Report, Boston, Mass., 1880.
 Second Annual Report of the State Board of Health, Lunacy, and Charity of Massachusetts, 1880.
 Supplement containing Report and Papers on Public Health.

LIST OF REGISTERED PHYSICIANS.

Name.	Residence.	Name.	Residence.
Adams, E. A.	422 8th st., s. e.	Carpenter, J. E.	104 C st., n. e.
Adams, A. C.	709 11th st., n. w.	Casta, J. B. G.	604 East Capitol st.
Adams, J. Lee	1335 E st., s. e.	Caldwell, C. T.	1732 10th st., n. w.
Adams, B. B.	1616 7th st., n. w.	Clum, A. H. W.	1431 S st., n. w.
Adams, Samuel S.	831 14th st., n. w.	Cook, G. Wythe.	1502 S st., n. w.
Adams, M. P.	1602 8th st., n. w.	Crook, Harrison	424 7th st., s. w.
Appleby, J. F. E.	63 Market st., George- town.	Colesberry, W. H.	723 14th st., n. w.
Atwood, O. W.	1923 12th st., n. w.	Corey, Waterman F.	906 French st., n. w.
Allen, Charles	415 7th st., s. w.	Cook, Samuel L. C.	1537 K st., n. w.
Augusta, A. T.	1319 L st., n. w.	Chew, Thomas J.	1210 31st st., n. w.
Ashford, F. A.	1320 New York av., n. w.	Coues, Elliott	1619 K st., n. w.
Albert, Charles	515 10th st., n. w.	Candee, H. O.	423 9th st., n. w.
Acker, George N.	1303 New York av., n. w.	Cate, W. M.	904 14th st., n. w.
Antisell, Thomas	1411 Q st., n. w.	Cardozo, J. L.	411 L st., n. w.
Antisell, Thomas, Jr.	1311 Q st., n. w.	Chealey, James B.	C bet. 44 & 6th sts., n. w.
Armstrong, William J.	1629 Conn. av., n. w.	Duhamel, W. J. C.	388 Indiana av., n. w.
Bliss, D. W.	1329 F st., n. w.	Dorsey, T. Graham	460 B st., s. e.
Bogau, S. W.	421 G st., n. w.	Dorsey, Lloyd	1022 9th st., n. w.
Brackett, John E.	31 B st., s. e.	Dexter, J. E.	453 C st., n. w.
Bond, Samuel S.	813 1st st., n. w.	Darling, Henry	Brightwood.
Blair, David	1618 14th st., n. w.	DeMeza, M. M.	927 9th st., n. w.
Borriowa, Joseph.	921 E st., n. w.	Dalley, O. A.	1802 R st., n. w.
Behrend, A.	709 H st., n. w.	Dovilliers, L. V.	1221 18th st., n. w.
Beall, B. M.	941 R. I. av., n. w.	Dobson, H. A.	429 3d st., s. e.
Bruckheimer, M.	240 4th st., s. w.	Donohue, Florence	1134 8th st., n. w.
Bushnell, J. H.	923 13th st., n. w.	Dyrenforth, R. G.	1418 U st., n. w.
Borman, C. V.	1114 Md. av., s. w.	Duvail, W. T. S.	1119 10th st., n. w.
Bowen, Charles H.	601 Mass. av., n. w.	Dooley, F. X.	801 Pa. av., s. e.
Baxter, J. H.	1504 H st., n. w.	Dyer, John I.	15th bet. K & L sts., n. w.
Baldwin, W. O.	1915 Pa. av., n. w.	Duncan, E. A.	230 1st st., n. e.
Bray, John	5th st., between H and I, n. e.	Dufour, J. F. R.	1814 14th st., n. w.
Beale, J. S.	206 Pa. av., s. e.	Deeble, H. M.	87 West st., George- town.
Barnes, J. D.	2136 Pa. av., n. w.	Dixon, William S.	18th and K sts., n. w.
Barker, H. H.	1019 F st., n. w.	De Witt, Calvin.	Soldiers' Home.
Bulkley, J. W.	805 12th st., n. w.	Eaton, P. H.	1318 T st., n. w.
Briscoe, W. C.	317 C st., n. w.	Eliot, Johnson	510 E st., n. w.
Busey, S. C.	1525 I st., n. w.	Eliot, J. Llewellyn.	Washington Asylum.
Baxter, J. B. G.	706 H st., n. e.	Evans, Warwick	1027 9th st., n. w.
Bird, James C.	1265 F st., n. w.	Edson, Susan A.	1308 1 st., n. w.
Bogue, A. P.	Bureau of Education.	Eversfield, W. O.	1529 14th st., n. w.
Bogan, M. V. B.	604 Mass. av., n. w.	Elzey, M. G.	926 New York av.
Bigelow, J. R.	931 G st., n. w.	Fisher, Samuel B.	321 East Capitol st.
Balliche, P. H.	1816 R st., n. w.	Franzoni, C. W.	808 H st., n. w.
Boldemann, Theodore.	823 8th st., n. w.	Fenwick, G. P.	405 7th st., s. w.
Byrnes, J. C.	1410 6th st., n. w.	Fisher, G. W.	Uniontown.
Ball, Charles A.	233 G st., n. w.	Ford, C. M.	150 Pa. av., s. e.
Burghardt, Caroline A.	998 H st., n. w.	French, R. D. De L.	1336 T st., n. w.
Byrnes, William F.	217 Delaware av., n. e.	Foster, R. A.	24 I st., n. e.
Bettes, Eugene	517 20th st., n. w.	Foster, Frank J.	2321 I st., n. w.
Bayne, John W.	328 East Capitol st.	Fry, Henry D.	819 14th st., n. w.
Bigelow, Horatio R.	1602 14th st., n. w.	Francis, John D.	2112 Pa. av.
Bassett, Simpson	615 A st., n. e.	Freeman, J. R.	1207 G st., n. w.
Ballob, Edward A.	7th st. road, county.	Ferry, L. A.	1313 Corcoran st., n. w.
Budd, Samuel W.	1321 F st., n. w.	Foster, George W.	Inasane Asylum.
Blinn, Douglass	1014 F st., n. w.	Friedrich, Leon L.	323 East Capitol st.
Baldwins, L. B.	U. S. Naval Hospital.	Fisher, John C.	1421 G st., n. w.
Boyd, J. C.	U. S. Naval Hospital.	Gleeson, J. K. P.	1227 N st., n. w.
Burnett, Swan M.	1215 I st., n. w.	Gibbs, Thomas F.	635 Rhode Isl' d av., n. w.
Beckwith, S. B.	1405 1 st., n. w.	Groot, S. I.	924 New York av., n. w.
Blackwell, Thomas S.	921 G st., n. w.	Glennan, P.	Cor. New Jersey av. and Boundary.
Beatty, Lonie K.	511 East Capitol st.	Garnett, A. Y. P.	1817 New York av., n. w.
Bransford, J. F.	U. S. Naval Hospital.	Grinated, William	637 9th st., n. e.
Baker, Frank	326 C st., n. w.	Gross, George.	311 East Capitol st.
Callan, C. V. N.	1423 F st., n. w.	Griffith, M. J.	1401 5th st., n. w.
Carroll, Joseph	912 M st., n. w.	Griffith, Samuel H.	Naval Dispensary.
Christie, Arthur	615 Pa. av., s. e.	Gilpin, George E.	Tennallytown.
Crew, S. B.	146 6th st., s. w.	Goddard, W. W.	Inasane Asylum.
Cragin, Charles H.	124 Dunbarton st., Georgetown.	Gelscking, H. N.	615 Louisiana av., n. w.
Calvert, Edward H.	62 DeFreese st., n. w.	Garrettsou, Frederick	425 9th st., n. w.
Crouse, J. L.	1146 8th st., n. w.	Graham, N. F.	Pension Office.
Cox, Christopher C.	Brightwood.	Goodman, William R.	216 13th st., s. w.
Cowling, William W.	1304 9th st., n. w.	Gilbert, Charles B.	1118 New York av., n. w.
Croumbie, John T.	603 Louisiana av., n. w.	Gihon, Albert L.	1736 I st., n. w.
Cornbin, E. L.	1812 I st., n. w.	Gibson, J. B.	Washington Barracks.
Craig, B. F.	611 H st., n. w.	Goulrick, P.	1115 G st., n. w.
Cull, Abner H.	Inasane Asylum.	Goldborough, E. K.	1331 K st., n. w.
Chase, Robert H.	76 Bridge st., George- town.	Hagner, Daniel R.	1814 H st., n. w.
Connell, B. F.		Harris, J. O.	7th and Boundary, n. w.
		Harris, J. D.	929 L st., n. w.
		Herbert, J. Wells	205 H st., n. w.

LIST OF REGISTERED PHYSICIANS—Continued.

Name.	Residence.	Name.	Residence.
Herbert, J. William	Marine Barracks.	Morgan, J. E.	905 E st., n. w.
Hazen, D. H.	407 6th st., s. w.	Morgan, E. C.	916 E st., n. w.
Hazen, W. P. C.	511 East Capitol st.	Magruder, G. L.	810 E st., n. w.
Hammett, C. M.	644 F st., s. w.	Mundell, John H.	1022 14th st., n. w.
Hartigan, J. F.	1125 14th st., n. w.	Melvin, M. B.	721 4th st., s. w.
Henderson, George	1908 H st., n. w.	Maus, R. G.	1701 6th st., n. w.
Huntoon, A. J.	Third Auditor's Office.	Meriam, E. C.	622 N. J. av., n. w.
Howard, Joseph T.	1126 9th st., n. w.	Marmion, W. V.	1106 F st., n. w.
Howard, F.	1019 F st., n. w.	Muncester, O. M.	1405 N. Y. av., n. w.
Howard, H. N.	918 Mass. av., n. w.	McWilliams, A.	607 4th st., s. w.
Heneberger, L. G.	Naval Hospital.	Murphy, P. J.	Columbia Hospital.
Holton, Adelaide T.	519 13th st., n. w.	Mackall Louis, jr.	71 Dunbarton street Georgetown.
Hagner, Charles E.	944 L st., n. w.		
Hyatt, Frank	1224 1st st., n. w.	Mackall, J. McV.	612 14th st., n. w.
Hansmann, Theodore	724 13th st., n. w.	McBlair, J. H.	2029 I st., n. w.
Hatch, Horace	1238 F st., n. w.	Mason, John Edwin	220 I st., n. w.
Hood, T. B.	1069 O st., n. w.	McLaughlin, Thomas N.	1310 F st., n. w.
Herdend, D.	1441 Corcoran st., n. w.	Maxwell, Charles D.	1716 I st., n. w.
Hoover, C. A.	1222 6th st., n. w.	Marr, S. S.	1415 10th st., n. w.
Herron, Charles S.	626 10th st., n. e.	McLeod, Wilfred	Corner Frederick and Prospect sta., George- town.
Houston, Samuel	1417 Columbia st., n. w.		
Hillyer, Frances S.	Room 34, P. O. Dept.	Menke, John R.	601 4th st., n. w.
Hadfield, George.	1333 F st., n. w.	Morrell, W. H.	Insane Asylum.
Henry, William S. B.	941 H st., n. w.	McPherson, D. M.	711 8th st., n. w.
Hartwell, J. B.	1808 S st., n. w.	Marsteller, A. A.	219 D st., n. w.
Heller, P. H.	213 6th st., n. w.	Masey, Thomas E.	2423 Pa. av., n. w.
Herron, George H.	1328 6th st., n. w.	McLean, John W.	1306 R st., n. w.
Harrison, J. S.	1911 I st., n. w.	McArdle, Thomas E.	707 12th st., n. w.
Heath, W. H.	1421 G st., n. w.	Minnich, William H.	1500 7th st., n. w.
Hoff, L. B.	1509 H st., n. w.	Mitchell, George H.	1312 F st., n. w.
Hoehling, Adolph A.	1253 Corcoran st.	McClurg, Walter A.	U. S. Naval Hospital.
Haeeler, F. A.	917 E st., n. w.	Mallan, Thomas F.	Providence Hospital.
Hart, Mary E.	939 E st., n. w.	Mann, W. A.	1003 K st., n. w.
Hamilton, John B.	1422 G st., n. w.	Mayfield, Clifton	Columbia Hospital.
Hoffman, W. J.	221 E st., n. w.	McVay, Stephen A.	526 7th st., s. w.
Harrison, George B.	1345 F st., n. w.	Maddox, W. R.	Georgetown.
Holden, R. T.	632 4th st., s. w.	Mosher, James	115 E st., s. e.
Hawkes, W. H.	1105 F st., n. w.	Muhleman, S. H.	723 6th st., n. w.
Johnson, A. E.	101 B st., s. e.	Norton, C. A.	805 H st., n. e.
Johnson, Dallas	825 New Jersey av., n. w.	Newton, Lewis E.	418 L st., n. w.
Johnson, H. S. E.	227 B st., s. w.	Naylor, William L.	456 M st., n. w.
Johnson, J. Taber	937 New York av., n. w.	Newman, W. G. H.	2403 Pa. av., n. w.
Johnson, W. W.	H and 14th sta., n. w.	Newman, H. M.	Do.
Johnson, J. B.	922 New York av., n. w.	Nicholson, William	1322 I st., n. w.
Jullin, M. L.	1212 I st., n. w.	Norris, Basil	1629 G st., n. w.
Johnston, G. F.	420 E st., n. w.	Neale, Richard A.	1252 7th st., n. w.
Jackson, W. W.	920 F st., n. w.	Nourse, jr., Charles H.	Cor. Mass. av. and 14th st., n. w.
Jones, H.	462 Louisiana av., n. w.		
Joyce, J. W.	912 I st., n. w.	Okie, W. T.	1210 G st., n. w.
Jolley, J. B.	512 E st., n. w.	Owens, Thomas	1107 18th st., n. w.
Jenkins, F. T.	2115 Pa. av., n. w.	O'Conner, Frank J.	802 6th st., s. w.
Keech, Thomas A. E.	645 Pa. av., s. e.	Patterson, D. C. (coroner)	919 I st., n. w.
King, A. F. A.	728 13th st., n. w.	Porter, H. T.	17 Bridge st., George- town.
Kleinschmidt, C. H. A.	3113 N st., n. w.		
Kelly, Daniel J.	2628 K st., n. w.	Palmer, W. G.	929 H st., n. w.
Kidder, J. H.	Smithsonian Institut'n	Palmer, G. S.	1113 Mass. av., n. w.
Ketcham, O. C.	37 C st., n. e.	Purvis, C. B.	Freedmen's Hospital.
Kellogg, George	1416 Q st., n. w.	Pope, G. W.	1334 I st., n. w.
King, Charles	817 5th st., n. w.	Parsons, Mary A.	724 11th st., n. w.
King, George S.	52 H st., n. e.	Parsons, John	1512 9th st., n. w.
Lamb, D. S.	1324 V st., n. w.	Parsons, M. S.	618 6th st., n. w.
Lauders, Thomas	Pension Office.	Prentiss, D. W.	1224 9th st., n. w.
Leach, H. E.	233 7th st., s. w.	Prentiss, C. E.	212 6th st., s. e.
Lee, George	1303 H st., n. w.	Peter, Armstead	3112 O st., n. w.
Lincoln, N. S.	1514 H st., n. w.	Poulton, W. E.	426 4th st., s. w.
Little, J. W.	Anacostia.	Patz, A.	311 Pa. av., n. w.
Lee, William	2111 Pa. av., n. w.	Pearson, C.	608 12th st., n. w.
Lieberman, C. H.	722 12th st., n. w.	Parkinson, C.	1003 O st., n. w.
Lovejoy, J. W. H.	900 12th st., n. w.	Penrod, Hiram J.	1635 Conn. av., n. w.
Lowwer, W. P.	1912 I st., n. w.	Pitts, William	1441 T st., n. w.
Lindely, Harvey	824 Conn. av., n. w.	Porter, H. C.	3145 P st., n. w.
Little, J. J.	1511 R st., n. w.	Parker, J. M.	Oxen Hill, Md.
Loomis, L. C.	P. O. box 307.	Parker, C. F.	1011 7th st., n. w.
Loguen, Sarah M.	2002 17th st., n. w.	Pool, B. G.	Barnes Hospital.
Latimer, George	1604 7th st., n. w.	Purman, J. J.	1435 Chapin st., s. w.
Le Conte, John N.	907 T st., n. w.	Richings, H.	608 14th st., n. w.
Long, Owen M.	1440 N st., n. w.	Raina, C. H.	1427 Corcoran st., n. w.
Lovering, Phillips A.	Naval Hospital.	Rautenberg, Charles	215 3d st., n. w.
Lyons, Samuel B.	Insane Asylum.	Rautenberg, L. E.	Do.
Mallam, C. E.	920 9th st., n. w.	Reyburn, Robert	2129 F st., n. w.
Mead, Theodore	902 22d st., n. w.	Relly, James E.	231 4th st., s. w.
Moore, J. B.	1924 Pa. av., n. w.	Reinhardt, Julius F. A.	537 8th st., s. e.
McKim, S. A. H.	25 5th st., s. e.		

LIST OF REGISTERED PHYSICIANS—Continued.

Name.	Residence.	Name.	Residence.
Ritchie, Louis W.....	3259 N st., n. w.	Thompson, J. Ford.....	1000 9th st., n. w.
Roberts, W. E.....	715 G st., a. e.	Thompson, Jr., J. Harry.....	1324 Mass. av., n. w.
Radcliffe, S. J.....	1211 F st., n. w.	Turner, Thomas J.....	1227 M st., n. w.
Russell, W. B.....	1424 L st., n. w.	Tarkington, J. A.....	217 D st., n. w.
Raines, Webster M.....	1318 G st., n. w.	Torrey, Turner.....	Anacostia.
Reynolds, W. B.....	U. S. Naval Hospital.	Taylor, William H.....	619 M st., n. w.
Karenberg, R.....	1457 Pierce Place, n. w.	Toner, J. M.....	615 La. av., n. w.
Rosse, Irving C.....	1106 F st., n. w.	Triplett, W. H.....	
Reid, Louis H.....	506 K st., n. w.	Tyler, W. Bowle.....	2918 P st., n. w.
Rogers, A. P.....	301 L st., a. e.	Tyler, Grafton.....	1300 30th st., n. w.
Roberta, Grace.....	204 5th st., a. e.	Tyler, A. C.....	125 Maryland av., n. e.
Rice, Nathan E.....	1529 14th st., n. w.	Taylor, L. M.....	701 M st., n. w.
Rixey, P. M.....	1518 K st., n. w.	Taulman, D. D.....	6th and G sts., n. w.
Ramsey, W. T.....	1327 Q st., n. w.	Trott, Thomas H.....	232 N. J. av., a. e.
Russell, H. A.....	924 P st., n. w.	Tebbs, A. Sydney.....	3322 M st., n. w.
Rosa, V. A. Sebiakin.....	423 9th st., n. w.	Townsend, W. W.....	1901 Vt. av., n. w.
Reyburn, Robert, Jr.....	2129 F st., n. w.	Triest, H. B.....	815 14th st., n. w.
Spackman, Mary D.....	1634 16th st., n. w.	Verdi, T. S.....	1413 P st., n. w.
Stanton, J. O.....	1344 G st., n. w.	Van Arnum, J. W.....	1081 8th st., n. w.
Stone, C. G.....	Brightwood.	Vowles, D. W.....	721 5th st., n. w.
Sumby, S. A.....	513 3d st., a. w.	Van Vleet, F. C.....	819 15th st., n. w.
Suddarth, J. L.....	21st st., n. a.	Walsh, Jno. K.....	1111 13th st., n. w.
Stearns, S. S.....	924 P st., n. w.	Walsh, F. S.....	430 1st st., n. e.
Sotheron, James T.....	1919 I st., n. w.	Woodbury, H. E.....	912 12th st., n. w.
Samson, George C.....	2419 Pa. av., n. w.	Ward, W. W.....	723 18th st.
Sonnenschmidt, C. W.....	626 E st., n. w.	Walter, J.....	1010 F st., n. w.
Street, D. B.....	61 H st., n. w.	Williamson, A. N.....	486 F st., a. w.
Sowers, Z. T.....	1324 N. Y. av., n. w.	Winter, Jno. T.....	1618 10th st., n. w.
Shekell, A. B.....	1529 32d st., n. w.	Watts, S. R.....	1018 19th st., n. w.
Smith, Thomas C.....	1133 13th st., n. w.	Winkow, Caroline B.....	1 Grant Place.
Scholl, Joseph.....	615 D st., n. w.	Walsh, Ralph S. L.....	326 C st., n. w.
Sweetman, J. T.....	1008 26th st., n. w.	Wolhaupter, D. P.....	801 H st., n. w.
Sturgia, P. M.....	2 Congress st., George- town.	Waggoner, S. I.....	813 Vt. av., n. w.
Stephenson, Joseph G.....	1007 F st., a. w.	Wales, Philip S.....	Bladensburg, Md.
St. Clair, F. O.....	1428 R. L. av., n. w.	Wells, Charles A.....	1102 14th st., n. w.
Schaeffer, E. M.....	1115 F st., n. w.	West, George William.....	708 9th st., n. e.
Sellhausen, E. A.....	686 G st., n. w.	Wooley, C. W.....	Insane Asylum.
Stratton, Jno. T.....	517 7th st., a. e.	Witmer, A. H.....	351 Pa. av., n. w.
Stevens, W. H.....	1311 H st., n. w.	Wallace, M. T.....	Hillman House.
Suter, Henderson.....	1209 31st st.	Walker, Mary E.....	801 9th st., n. w.
Stack, M. J.....	Insane Asylum.	Ward, E. J.....	Brightwood.
Shirley, Jr., C. B.....	1336 Q st., n. w.	White, James M.....	939 F st., n. w.
Shadd, Furman J.....	Freedmen's Hospital.	Warman, W. H. H.....	1358 8th st., n. w.
Stout, Alexander M.....	1137 24th st., n. w.	Young, Park G.....	344 Pa. av., n. w.
Swormstedt, L. B.....	1455 14th st., n. w.	Young, Noble.....	1336 N. Y. av., n. w.
Shoulters, George H.....	1118 10th st., n. w.	Young, James T.....	920 14th st., n. w.
Townshend, Smith, health officer.	213 4 1/2 st., n. w.	Yarrow, H. C.....	Children's Hospital.
		Yarnall, J. H.....	

LIST OF REGISTERED UNDERTAKERS.

Barker, R. W.....	612 11th st., n. w.	Kickham, William.....	3327 O st., Georgetown.
Batters, George C. H.....	1408 South Carolina av.	Lee's, Henry, Sons.....	332 Penn. av., n. w.
Berry, George.....	471 School st., a. w.	Lewis, William.....	1650 Vermont av., n. w.
Beckett, William.....	920 E st., a. w.	Mitchell, John M.....	914 11th st., a. e.
Birch, Joseph F.....	3043 M st., n. w.	McHenry, J. P.....	Mt. Olivet Cemetery.
Brown, W. P. & Son.....	Cor. 9th and E. sts., a. e.	McKerichar, Alex.....	Greenwood Cemetery.
Boteler, E. M.....	735 8th st., a. e.	Nelson & Dabney.....	441 L st., n. w.
Bond, Thomas.....	Uniontown.	Parker & Scott.....	1108 Connecticut av.
Bergdorf, Aug.....	312 Penn. av., n. w.	Randall & Jenifer.....	622 4 1/2 st., a. w.
Buchly, William S.....	912 Penn. av., n. w.	Shelton, John H.....	Methodist Cemetery.
Clementa, James T.....	1235 32d st., n. w.	Cross, J. B.....	Congressional Ceme- tery.
Cohen, Moses.....	8th st., bet. H and I sts.		
Clark & Brother.....	1735 K st., n. w.	Smith, Norburn.....	1723 Cedar st., n. w.
Day Addison.....	301 4 1/2 st., a. w.	Sigourney, W. S.....	2824 Penn. ave., n. w.
Davis, James H.....	1626 11th st., n. w.	Spears, W. R.....	940 F st., n. w.
Fries, Mrs. D.....	1008 6th st., n. w.	Spindler, Fred.....	1238 7th st., n. w.
Gawler, Joseph.....	1728 Penn. av., n. w.	Spindler, William F.....	1029 7th st., n. w.
Geler, Frank.....	1113 7th st., n. w.	Tibbs, Moses.....	Cor. 12th and R. I. ave.
Gasch Francis.....	Bladensburg, Md.	Travers, D. T.....	812 3d st., a. w.
Harvey, R. F., agent.....	921 7th st., n. w.	Wetzel, John A.....	1317 32d st., n. w.
Hough, J. E.....	319 1/2 Penn. av., Balti- more, Md.	West, John.....	1113 Q st., n. w.
Jett, John W.....	2900 M st., n. w.	Williams, Lemuel.....	1705 Penn. av., n. w.
Johnson, Isaac.....	812 3d st., a. w.	Wright, John R.....	1337 10th st., n. w.
Jordan, H. & Son.....	1910 8th st., n. w.	Waddy, Warner.....	Potomac City, County.
Joy, Charles H. & Co.....	19th and K st., n. w.	Young, R. D.....	641 Massachusetts av.
		Zurhorst, George F.....	320 Penn. av., a. e.

576 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

LIST OF REGISTERED PLUMBERS.

Name.	Residence.	Name.	Residence.
Anderson, James F	804 B st., s. e.	Lockhead, James	1414 Pa. av., n. w.
Artz, Samuel	488 Louisiana ave., n. w.	McAvoy, John M	1829 H st., n. w.
Atchison, J. J.	1316 14th st., n. w.	McAvoy, George F	710 14th st., n. w.
Anadale, John A.	1288 9th st., n. w.	McCarthy, J. J.	1251 32d st., n. w.
Barnard, Edward	Cor. 18th and H sts., n. w.	McMahon, John J	2008 I st., n. w.
Bryan, James F	419 9th st., n. w.	Moran, John	2128 Pa. av., n. w.
Brill & Hayden	308 Penn. av., n. w.	Miller, George H	506 9th st., n. w.
Bond, R	133 Penn. av., n. w.	Mitchell, John	820 14th st., n. w.
Brooks, E. F.	531 15th st., n. w.	Moss, James W	408 1/2 N. J. av., n. w.
Brooks, R. C.	622 D st., n. w.	Nolan, James	1411 F st., n. w.
Bride, C. T.	306 Penn. av., s. e.	O'Brien, M. J.	306 4 1/2 st., n. w.
Beuter, Max A.	6 D st., n. w.	O'Donnoghue, Joseph	98 Bridge st., n. w.
Cantwell, John		O'Hare, Edward	2118 Pa. av., n. w.
Caverly, Edward & Co.	1425 N. Y. av., n. w.	O'Hagan, James	1917 Pa. av., n. w.
Campbell, R. G.	517 10th st., n. w.	Power, John A.	424 9th st., n. w.
Connor, James A.	1835 9th st., n. w.	Pettit & Dripps	Cor. 14th & B sts., n. w.
Cruit & Scott	810 9th st., n. w.	Quinter, Joseph E., jr	1323 Vt. av., n. w.
Dougherty, W. W.	1340 I st., n. w.	Ragan, James	185 F st., n. w.
Daly, John	703 9th st., n. w.	Ridgeway, E. A.	1426 F st., n. w.
Driscoll, H		Rothwell, W	113 B st., s. e.
Eckhoff, Christian F	61 1/2 North Capitol st.	Reach, Robert	1742 14th st., n. w.
Erich, C. A.		Rapley, W. H.	1815 E st., n. w.
Fitzhugh, J. B.	306 East Capitol st.	Suman, James L.	713 D st., n. w.
Fritz, T	117 7th st., n. w.	Sherwood, S. H.	1113 Park st., n. e.
Fitzgerald, Robert	22 G st., n. w.	Spearing, S. J.	450 Pa. av., n. w.
Goodall, George W.	425 12th st., n. w.	Smithson, C. F.	409 G st., s. w.
Gorman, Edward	807 14th st., n. w.	Sheld, Samuel S.	409 9th st., n. w.
Hayward & Hutchinson	817 9th st., n. w.	Thorn, Charles G	1230 F st., n. w.
Hutchins, George E.	632 H st., n. w.	Thorn, H. C.	725 15th st., n. w.
Harrover, James R.	1406 14th st., n. w.	Thomas & Albinson	1103 7th st., n. w.
Horan, James F.	102 M st., s. e.	Talty, James	1017 I st., n. w.
Harrison, James T.	603 Penn. av., s. e.	Tennant, Alexander	8063 M st., n. w.
Hannan, Edward J.	517 11th st., s. e.	Umhau, C. F.	1800 7th st., n. w.
Hannan, Daniel	517 F st., n. w.	Waters, S. M.	1213 32d st., n. w.
Hannan & Co.	717 M st., n. w.	Work, W. J.	528 8th st., n. e.
Hill, R. A., & Son	2250 18th st., n. w.	Wilkerson, J. H.	220 7th st., s. e.
Hilbeary, T. W.	434 11th st., n. w.	Winter, H. E.	592 Del. av., n. e.
Jenks, W. S., & Co.	717 7th st., n. w.	Ward & Cunningham	414 11th st., n. w.
King, F. A.	1829 7th st., n. w.	Williamson, Donald S.	923 Mass. av., n. w.
Lansdale, E. G.	2134 Pa. av., n. w.		

All of which is respectfully submitted.

SMITH TOWNSHEND, M. D.,
Health Officer, District of Columbia.

The COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

APPENDIX Z 1.

DISTRICT OF COLUMBIA, HEALTH DEPARTMENT,
Washington, September 29, 1881.

GENTLEMEN: Referring to your letter of the 15th ultimo, I have the honor to present herewith estimate of appropriations required to defray the expenses of conducting the sanitary service, prevent the sale of unwholesome food, secure a full and correct record of vital statistics, and prevent domestic animals from running at large in the District of Columbia during the fiscal year ending June 30, 1883:

For salary of health officer	\$3,000
For six sanitary inspectors, at \$1,200 each	7,200
For two food inspectors, at \$1,200 each	2,400
For clerks	7,000
For salary of poundmaster	1,200
For salary of inspector of marine products	1,200
For salary of messenger	600
For contingent expenses, including books, stationery, fuel, rent, and miscellaneous items	4,000

As the inspector of plumbing was last year appropriated for in the inspector of buildings' office, I have not included the salary of that officer in these estimates. He being employed under direction of the health officer, however, I have asked for a small advance on the sum for contingent expenses, in order to be enabled to provide books, blanks, permits, office furniture, stationery, &c., for him.

The salary of the inspector of marine products was last year placed at \$1,000. This was done, I think, without proper consideration. The duties of that officer are onerous, and of much importance. There should be no distinction between salaries of inspectors; and I have asked that \$1,200 be allowed him in common with the others.

In addition to this, I would recommend that \$1,000 be asked of Congress, to be used in abating nuisances on public property, such as accumulations of rank weeds, filth, *débris*, &c. A fund for this purpose is much needed at certain seasons of the year.

Very respectfully, &c.,

SMITH TOWNSHEND, M. D.,
Health Officer, District of Columbia.

The COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

a—REPORT OF THE UNITED STATES INSPECTOR OF GAS
AND METERS FOR THE FISCAL YEAR ENDING JUNE 30,
1881.

OFFICE U. S. INSPECTOR OF GAS AND METERS,
Washington, D. C., September 5, 1881.

GENTLEMEN: I have the honor herewith to submit copy of the annual report of this office, showing its operations for the fiscal year ending June 30, 1881.

Very respectfully, your obedient servant,

S. CALVERT FORD,
Inspector of Gas and Meters.

Hon. COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

ILLUMINATING POWER AND PURITY.

The illuminating power and purity of the gas supplied by the Washington Gas Light Company from July 1, 1880, to June 30, 1881, are as follows:

Average illuminating power during the year	candles..	16.72
Highest illuminating power during the year	do.....	19.20
Lowest illuminating power during the year	do.....	14.80
Average quantity of ammonia in 100 cubic feet during the year	grain..	.97
Highest quantity of ammonia in 100 cubic feet during the year	grains..	3.52
Lowest quantity of ammonia in 100 cubic feet during the year	grain..	.08
Average quantity of sulphur in 100 cubic feet during the year	grains..	9.73
Highest quantity of sulphur in 100 cubic feet during the year	do.....	26.03
Lowest quantity of sulphur in 100 cubic feet during the year	do.....	3.42

The quality of the gas supplied by the Washington Gas Light Company during the past year has been uniformly good, and in accordance with the requirements of the act of Congress regulating gas works in this District.

Complaints have fallen off considerably regarding poor light, and

stoppages produced mainly from the presence of naphthaline in the service pipes, have become much less frequent.

The gas contained but a small quantity of sulphur (an impurity which no method yet devised in a commercial way, has enabled engineers to free gas from entirely).

The quantity of ammonia present was slight, and on two occasions the gas was absolutely free from it.

This impurity is now utilized, forming the base of ammonia sulphate, a salt which is extensively employed in alum making, and is the starting point of the preparation of chloride of ammonium, carbonate of ammonia, liquid ammonia, and other similar products.

On eleven occasions during the past year the gas supplied by the Washington Gas Light Company was of less illuminating power than sixteen candles, as follows :

	Candles.
December 13.....	15.92
December 17.....	15.85
December 20.....	15.97
December 27.....	15.14
January 3.....	15.84
February 16.....	15.99
February 24.....	15.42
April 6.....	15.42
May 12.....	14.80
June 8.....	15.35
June 18.....	15.70

On three occasions the gas of this company contained a slight excess of sulphur, over the 20 grains allowed in each 100 cubic feet: March 2, 20.89 grains; April 5, 20.20 grains, April 22, 26.03 grains.

The illuminating power and purity of the gas supplied by the Georgetown Gas Light Company from July 1, 1880, to June 30, 1881, are as follows :

Average illuminating power during the year.....	candles..	17.06
Highest illuminating power during the year.....	do....	20.81
Lowest illuminating power during the year.....	do....	10.55
Average quantity of ammonia in 100 cubic feet during the year.....	grains..	2.45
Highest quantity of ammonia in 100 cubic feet during the year.....	do....	9.09
Lowest quantity of ammonia in 100 cubic feet during the year.....	grain..	.46
Average quantity of sulphur in 100 cubic feet during the year.....	grains..	13.27
Highest quantity of sulphur in 100 cubic feet during the year.....	do....	34.11
Lowest quantity of sulphur in 100 cubic feet during the year.....	do....	6.23

The quality of the gas supplied by the Georgetown Gas Light Company during the first half of the fiscal year, with a few exceptions, was very high and quite free from impurities.

On several occasions during the months of January and February the illuminating power of the gas was very poor, and the sulphur was in excess of the quantity allowed.

According to letters received from the company these violations were owing to derangements in the manufacturing department, and they further state that the defaults could not have been prevented with ordinary care and prudence, but were occasioned by some unavoidable cause.

During the months of March, April, and May, this company were required to make considerable alterations in their machinery, for conducting waste products from the works, and in accomplishing this object, the scrubbers were frequently thrown out of action, which was the cause of the gas containing in quite a number of instances an excess of ammonia, and on a few occasions an excess of sulphur, with some depression, in the illuminating power.

The depressions in the power of the gas, last mentioned, were mostly due to defective retorts.

These works are now in fair condition, and it is not likely that violations will be as frequent during the present year.

On twenty-nine occasions during the year the gas supplied by this company was of less illuminating power than sixteen candles, as follows:

	Candles.
July 9	15.84
July 10	15.89
July 12	15.97
September 22	15.90
November 12	15.72
November 20	14.39
November 22	15.85
November 23	15.30
November 26	15.50
December 7	15.99
December 9	15.99
December 11	15.82
December 20	15.23
December 28	15.81
December 30	15.82
January 10	15.67
January 19	10.55
January 20	12.85
January 24	15.59
January 25	15.76
January 26	14.60
January 31	14.71
March 16	14.68
March 22	15.37
March 26	14.02
March 31	14.94
April 13	15.90
May 14	15.27
May 16	14.56

On twenty-seven occasions the gas supplied by this company contained an excess of ammonia over the 5 grains allowed in each 100 cubic feet:

	Grains.
March 7	5.69
March 8	5.69
March 9	6.51
March 10	6.51
March 11	6.03
March 12	6.03
March 14	5.40
March 15	5.40
April 28	8.58
April 29	8.58
April 30	7.82
May 3	6.40
May 4	6.40
May 5	5.89
May 6	5.89
May 9	6.46
May 10	6.46
May 11	8.26
May 12	8.26
May 13	9.09
May 14	9.09
May 16	7.73
May 17	7.73
May 18	5.35
May 19	5.35
May 20	5.37
May 21	5.37

On thirty-two occasions the gas supplied by this company contained an excess of sulphur over the 20 grains allowed in each 100 cubic feet:

	Grains.
December 29	21.92
December 30	21.92
December 31	23.83
January 3	22.05
January 4	22.05
January 28	29.31
January 29	29.31
January 31	29.86
February 1	29.6
February 2	29.86
February 3	29.86
February 4	29.72
February 5	29.72
February 7	34.11
February 8	34.11
February 21	20.13
February 23	20.08
February 24	20.08
February 28	22.53
March 1	22.53
March 2	20.13
March 3	20.13
March 7	24.11
March 8	24.11
March 9	22.74
March 10	22.74
March 11	23.42
March 12	23.42
May 9	20.68
May 10	20.64
May 16	25.07
May 17	25.07

In every instance that violations have occurred, no matter how slight the infraction, notice has been served on the company violating, in accordance with the requirements of the first section of gas act.

This office has received each month that violations of the standards have been reported therein, communications from the company so defaulting, giving their reasons why they were unable to comply with the requirements of the act. Said communications are on file.

The specific gravity of the gas supplied by the Washington Gas Light Company was: Average specific gravity, .498; air, 1,000; highest specific gravity, .576; lowest specific gravity, .448.

Specific gravity of the gas supplied by the Georgetown Gas Light Company was: Average specific gravity, .497; air, 1,000; highest specific gravity, .511; lowest specific gravity, .475.

GAS BURNERS.

During the past year much time and attention has been bestowed in testing the improved flat-flame burners, manufactured by Messrs. George Bray & Co., of Leeds, England.

In particular was attention given to inspection of Bray's special union slit and special union jet-burners.

Tests were also made with Bray's 30-candle "standard" patent slit union burner, and regulator union jet-burners, and also with the following:

Peeble's patent governor burner, Sugg's double lettered Argand burner, "K K," 42 holes, with 9-inch chimney.

Sugg's letter "D" standard London Argand burner, 24 holes, with 6-inch chimney.

Sugg-Letheby Argand burner, 15 holes, with 7-inch chimney (present standard in this District), and Ellis & Co.'s patent regulator burners, with hexagon pillar.

Description of burner.	Pressure at points of ignition.	Actual consumption of gas per hour.	Illuminating power in candles at rate of actual consumption.	Illuminating power in candles at rate of 5 cubic feet per hour.	Value of one foot of gas in terms of standard candle.
	<i>Inches.</i>	<i>Cubic feet.</i>	<i>Candles.</i>	<i>Candles.</i>	<i>Candles.</i>
Bray's Standard Union Slit (30 candle) .....	.255	6.90	30.04	21.76	4.35
Bray's Special Union Slit No. 7 .....	.50	4.74	19.20	20.25	4.05
Bray's Special Union Slit No. 6 .....	.50	4.10	16.61	20.25	4.05
Bray's Special Union Slit No. 5 .....	.50	4.24	16.97	20.01	4.00
Bray's Special Union Slit No. 4 .....	.60	3.49	12.58	18.02	3.60
Bray's Special Union Jet No. 7 .....	.50	4.84	19.12	19.76	3.95
Bray's Special Union Jet No. 6 .....	.55	4.32	17.10	19.79	3.95
Bray's Special Union Jet No. 5 .....	.60	4.14	15.65	18.90	3.78
Bray's Special Union Jet No. 4 .....	.55	3.88	12.04	17.81	3.56
Bray's Regulator Union Jet No. 7 .....	.50	4.99	17.69	17.72	3.54
Bray's Regulator Union Jet No. 6 .....	.50	5.18	17.03	17.01	3.46
Bray's Regulator Union Jet No. 5 .....	.60	4.37	13.71	15.06	3.18
Bray's Regulator Union Jet No. 4 .....	.60	3.97	11.46	14.43	2.88
Ellis's Regulator Lava Tip (hexagon pillar) .....	.475	4.90	20.25	20.06	4.18
Peeble's Patent Governor Burner .....	.70	4.26	17.39	20.41	4.08
Sugg's Argand "K K," 42 holes, 9-inch chimney ..	.20	8.49	34.17	20.12	4.02
Sugg's Argand "D," 24 holes, 6-inch chimney .....	.175	4.51	16.91	18.74	3.74
Sugg-Letheby Argand, 15 holes, 7-inch chimney ...	.05	4.64	15.79	17.01	3.40

The illuminating power of the gas supplied in this District is determined on the "Bunsen photometer," using the English parliamentary standard Argand burner, having 15 holes and a 7-inch chimney.

This burner was adopted in 1863, for determining the illuminating power of the gas supplied in the city of London, and is generally known as the Sugg-Letheby Argand. It is not, however, the present standard burner in England.

The gas referees in 1870 adopted Sugg's London Argand burner No. 1, having 24 holes and a 6-inch chimney, as a standard, and this burner is at present used by the referees for testing.

By the use of this improved burner the illuminating value of 5 cubic feet of London gas is increased about 1.75 candles.

On examination of the above table of tests, made with various burners, it will be observed that the illuminating power obtained with Bray's special burners Nos. 5, 6, and 7, both union slit and jet form, was high, but with Bray's regulator burners only moderately good.

The result of test with Bray's standard union slit burner was highly satisfactory. This burner is best suited for street illumination, and will yield the maximum candle power obtainable from a cubic foot of gas.

Peeble's governor burner furnished a high candle power. This burner will be found very economical and desirable in localities where excessive pressure prevails.

Sugg's "K K" Argand with central flame, performed well, but the candle power obtained, per cubic foot of gas consumed, was not equal to the candle power obtained with Bray standard union slit burner.

This Argand burner is rated to consume 10.5 cubic feet per hour, and at this stated consumption to furnish an illuminating power equal to 34

candles. In the test made with this burner it only required 8.49 cubic feet per hour to yield 34.17 candles.

This test proves conclusively the superior quality of the gas supplied in this city, compared with that furnished in the city of London, where the above described burner was rated. A saving in the consumption of over 19 per cent., with equal illumination, was the result of test.

Sugg's "D" Argand and the Sugg Letheby Argand were not suited for the quality of the gas experimented with, hence the poor results obtained with those burners.

The Ellis regulator burner maintained its good reputation established last year, and is a fair sample of the best flat-flame burner manufactured in this country.

The special burners manufactured by Bray & Co. compare favorably with any yet inspected by this office; they are well made and no doubt will prove very durable in practical use. They are best adapted for consuming gases of high gravity.

Gas of fine quality will yield a higher candle-power per cubic foot consumed through a well made flat-flame burner, either batwing or fishtail form, than can be obtained with the Argand burners generally in use. This has been satisfactorily demonstrated during the past year in this city. The gas supplied by the Washington Gas Light Company for some months has been enriched with naphtha; the combination of naphtha with coal yields a richer and higher specific gravity gas than we had formerly, and the results obtained with the parliamentary Argand burner having 15 holes, which the law expressly states must be used in determining the illuminating power of the gas supplied in this District, does not represent its true candle-power.

The ordinary batwing and fishtail burners, such as the majority of consumers use, give from 15 to 20 per cent. more light without increased consumption.

INSPECTION OF METERS.

One thousand one hundred and thirty meters were inspected and proved by this office during the fiscal year ending June 30, 1881. With the exception of one meter inspected and proved for the Alexandria Gas Light Company, the above number were inspected and proved for the Washington and Georgetown Gas Light Companies, and for consumers of gas.

The results of inspection were as follows: 46 registered fast against the consumers, average error 3.36 per cent.; 95 registered slow against the companies, average error 8.35 per cent.; 954 registered within the limits allowed by law, namely, 2 per cent. either way, and were sealed, and returned to the companies for service; 33 did not register the gas flowing through them, and 1 was locked so no inspection could be made; 170 of the above-mentioned meters were inspected and proved on complaints; 59 were complained of by consumers of gas; 19 registered fast, average error 3.76 per cent.; 10 registered slow, average error 5.54 per cent., and 30 registered within the limits allowed by law; 111 were complained of by the gas companies; 1 registered fast 3.33 per cent.; 67 registered slow, average error 13.97 per cent.; 13 registered within the limits allowed, and 30 did not register.

All the meters inspected, with the exception of one, were what are known as dry meters, having leather partitions, or diaphragms, for measuring the gas; the one wet meter referred to was inspected and proved for the architect of the Capitol building.

I respectfully renew the recommendation submitted in last annual

report, that the act of Congress regulating gas-works, approved June 23, 1874, be modified, so as to require, when for any purpose whatever the heads of meters that have been inspected, proved, and sealed are removed by the gas companies, meters of this description should be classed as repaired meters, and brought to this office for reinspection before again being placed in service.

The seal of the inspector is the evidence that the meter has been properly tested and proven as required by law.

To admit the right of the companies to remove the head of a sealed meter and rectify whatever is wrong, and return meter to service without reinspection and sealing, would be to render the law practically inoperative, by making uncertain, if not impossible, the protection secured through inspection and sealing, by the office created for that purpose.

I would further recommend that this office be allowed a messenger. A man has been employed to do work of this description during the past six years, and has been paid for said services out of the meter fees, at the rate of \$456.25 per annum. But owing to the reduced number of meters inspected during the last two years the surplus revenue which had accumulated from previous years, when a greater number of meters were tested, is now nearly exhausted, and the indications not being more favorable for the present year, the fees receivable from this source will not be sufficient to maintain a messenger and meet the other necessary expenses, to wit, keeping in repair the apparatus, providing fuel, chemicals, meter seals, and stationery.

S. CALVERT FORD,
Inspector of Gas and Meters.

584 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

TABLE A.—*Illuminating power and purity of the gas supplied by the Washington Gas Light Company from June 30, 1880, to June 30, 1881.*

Months of the year.	* Number of observations.	Illuminating power in sperm candles.			Quantity of ammonia in 100 cubic feet.			Quantity of sulphur in 100 cubic feet.			Number of occasions that sulphurated hydrogen was present during the year.
		Mean.	Highest.	Lowest.	Mean number of grains.	Highest number of grains.	Lowest number of grains.	Mean number of grains.	Highest number of grains.	Lowest number of grains.	
July	25	17.21	19.20	16.04	1.27	2.38	.84	5.55	6.85	2.43	25
August	26	17.18	19.15	16.00	.72	1.70	.21	7.24	11.98	4.11	14
September	27	17.13	18.78	16.00	.86	1.67	.17	6.64	8.58	4.11	17
October	25	16.81	17.55	16.13	.45	1.06	.06	7.46	10.24	5.48	25
November	26	16.53	17.34	16.05	.31	.80	.17	8.24	12.67	4.79	26
December	25	16.23	17.29	15.85	.35	.85	.12	11.04	14.04	7.67	25
January	24	16.40	17.06	15.14	.97	1.67	.28	8.40	12.23	5.00	24
February	26	16.48	17.52	15.99	1.72	2.52	.85	12.45	16.78	7.89	24
March	23	16.91	18.75	15.42	1.32	2.06	.73	14.83	20.89	11.13	23
April	27	16.75	17.85	15.42	1.23	2.23	.60	14.80	26.03	9.12	27
May	25	16.51	17.69	14.80	1.38	2.12	.63	11.51	16.85	7.19	19
June	26	16.50	17.31	15.80	1.06	1.57	.68	8.65	10.96	7.19	26
Totals	805	200.78	.....	.....	11.64	.....	.....	116.81	.....	.....	275

AVERAGE FOR THE YEAR.

Illuminating power in sperm candles.			Quantity of ammonia in 100 cubic feet.			Quantity of sulphur in 100 cubic feet.			Sulphurated hydrogen.
* Mean of 305 observations.	Highest.	Lowest.	Mean number of grains.	Highest number of grains.	Lowest number of grains.	Mean number of grains.	Highest number of grains.	Lowest number of grains.	Number of times present during the year.
16.72	19.20 (July 22.)	14.80 (May 12.)	.97	2.52 (Jan. 26.)	.08 (Sept. 2)	9.73	26.03 (April 22)	3.42 (July 22.)	275

* Each observation consists of twenty readings on the Bunsen photometer, at intervals of one minute.

REMARKS.—On eleven occasions the illuminating power of the gas was less than sixteen candles; on three occasions sulphur was in excess of the quantity allowed. With the exception of these violations, the quality and purity of the gas supplied by the Washington Gas Light Company during the year has been in accordance with the requirements of the act of Congress regulating gas-works, approved June 23, 1874.

S. CALVERT FORD,
United States Inspector of Gas and Meters for the District of Columbia.

TABLE B.—*Illuminating power and purity of the gas supplied by the Georgetown Gas Light Company from June 30, 1880, to June 30, 1881.*

Months of the year.	* Number of observations.	Illuminating power in sperm candles.			Quantity of ammonia in 100 cubic feet.			Quantity of sulphur in 100 cubic feet			Number of occasions that sulphureted hydrogen was present during the year.
		Mean.	Highest.	Lowest.	Mean number of grains.	Highest number of grains.	Lowest number of grains.	Mean number of grains.	Highest number of grains.	Lowest number of grains.	
July	25	17.15	18.87	15.84	2.06	2.55	1.51	10.79	13.15	8.08	.....
August	24	17.74	20.24	16.06	1.76	2.27	1.42	10.60	13.01	8.49	.....
September	27	17.50	19.16	15.90	2.39	4.31	1.24	10.06	13.15	8.49	.....
October	25	18.37	20.02	16.74	1.04	1.41	.85	8.35	9.59	6.23	.....
November	26	17.12	19.30	14.39	1.52	4.08	.62	12.00	17.12	6.57	.....
December	24	16.41	17.45	15.23	.75	1.36	.54	12.71	18.01	8.90	.....
January	20	16.19	19.28	10.55	.81	1.13	.46	15.34	23.83	8.90	7
February	26	16.67	18.54	14.60	1.81	3.40	.96	21.66	34.11	10.96	3
March	23	16.68	18.19	14.68	4.50	6.51	2.80	17.46	24.11	7.80	.....
April	26	16.64	18.16	14.02	2.45	3.40	1.81	13.33	17.64	9.45	2
May	24	16.75	18.95	14.56	6.68	9.09	4.25	16.76	25.07	12.33	.....
June	26	17.57	20.81	15.97	3.70	5.83	2.19	10.21	15.34	6.57	.....
Total..	296	204.79	.....	.....	29.47	.....	.....	156.27	.....	.....	12

AVERAGE FOR THE YEAR.

Illuminating power in sperm candles.			Quantity of ammonia in 100 cubic feet.			Quantity of sulphur in 100 cubic feet.			Sulphureted hydrogen.
* Mean of 206 observations.	Highest.	Lowest.	Mean number of grains.	Highest number of grains.	Lowest number of grains.	Mean number of grains.	Highest number of grains.	Lowest number of grains.	Number of times present during the year.
17.06	20.81 (June 3.)	10.55 (Jan. 19.)	2.45	9.09 (May 13.)	.46 (Jan. 17.)	13.27	34.11 (Feb. 7.)	6.23 (Oct. 20.)	12

* Each observation consists of twenty readings on the Bunsen photometer, at intervals of one minute.

REMARKS.—On twenty-nine occasions the illuminating power of the gas was less than sixteen candles. On twenty-seven occasions ammonia was in excess of the quantity allowed. On thirty-two occasions sulphur was in excess of the quantity allowed. With the exception of these violations the quality and purity of the gas supplied by the Georgetown Gas Light Company during the year, has been in accordance with the requirements of the act of Congress regulating gas-works, approved June 23, 1874.

S. CALVERT FORD,

United States Inspector of Gas and Meters for the District of Columbia.

586 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

TABLE C.—*Meters inspected and proved for the Washington Gas Light Company and for consumers of gas in Washington from June 30, 1880, to June 30, 1881.*

	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Total.
Whole number of meters tested...	87	53	48	85	215	40	172	83	76	83	51	41	1,034
New meters for company.....		2		3	173	1	102			1			282
Number fast.....					9		3						12
Per cent. fast.....					3.19		2.77						*2.98
Number slow.....													
Per cent. slow.....													
Number correct.....		2		3	184	1	99			1			279
Repaired meters for company.....	78	42	43	78	34	20	47	67	59	74	36	33	619
Number fast.....							1		1				2
Per cent. fast.....							3.00		2.50				*2.75
Number slow.....								1	1	1			3
Per cent. slow.....							2.66	3.08	8.00				*4.58
Number correct.....	78	42	43	78	34	20	46	66	57	73	36	33	605
Consumers' meters, on complaint of consumers.....	1	1	1	1	1	9	7	4	3	3	8	1	46
Number fast.....					1	2	5		1			2	14
Per cent. fast.....	3.91			3.83	2.50	4.79	3.28		4.00		3.66	3.33	*2.66
Number slow.....						2		8		1			6
Per cent. slow.....						3.58		3.11		5.50			*4.06
Number correct.....		1	1			5	2	1	2	2	6		20
Consumers' meters, on complaint of company.....	8	8	4	3	7	10	16	12	14	5	7	8	102
Number fast.....													
Per cent. fast.....													
Number slow.....	6	7	1	3	5	8	10	4	7	2	5	6	64
Per cent. slow.....	14.66	11.59	6.33	17.05	11.89	18.95	16.09	16.45	15.28	16.41	16.80	15.11	*14.50
Number correct.....	1	1	1			1	1	1	2	1		1	10
Consumers' meters, on complaint of company, that did not register.....	1		2		2	1	5	7	5	2	2	1	26

*Average.

†One locked.

REMARKS.—During the fiscal year ending June 30, 1881 this office inspected and proved for the Washington Gas Light Company, and for consumers of gas, in Washington, 1,034 meters. Of this number 28 registered fast, average error 3.13 per cent.; 73 registered slow, average error 7.70 per cent.; 905 registered within the limits allowed by law, namely, 2 per cent. either way; 27 did not register the gas flowing through them, and one was locked so gas could not flow through.

S. CALVERT FORD,

United States Inspector of Gas and Meters for the District of Columbia.

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 587

TABLE D.—*Meters inspected and proved for the Georgetown Gas Light Company and for consumers of gas in Georgetown from June 30, 1880, to June 30, 1881.*

	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Total.
Whole number of meters tested.....				14	16	13	24	9		5	2	12	95
New meters for company.....				6								1	7
Number fast.....													
Per cent. fast.....													
Number slow.....													
Per cent. slow.....													
Number correct.....				6								1	7
Repaired meters for company.....				6	10	8	24					8	56
Number fast.....					3	2	6					1	12
Per cent. fast.....					5.52	3.45	3.55					1.91	8.60
Number slow.....				4	3	3						5	15
Per cent. slow.....				4.44	8.60	7.66						5.63	*6.58
Number correct.....				2	4	3	18					2	29
Consumers' meters on complaint of consumers.....					1	4		4		5	2	3	19
Number fast.....						2		1		1		1	5
Per cent. fast.....						3.08		3.83		3.08		5.50	*3.87
Number slow.....						1				2		1	4
Per cent. slow.....										5.75		12.33	*7.02
Number correct.....					1	3		3		2	2	1	10
Consumers' meters on complaint of company.....				2	3			4					9
Number fast.....								1					1
Per cent. fast.....								3.33					3.33
Number slow.....				1	1			1					3
Per cent. slow.....				8.33	11.50			20.50					*18.44
Number correct.....				1	2								3
Consumers' meters on complaint of company that did not register.....					2	1		3					6

*Average.

REMARKS.—During the fiscal year ending June 30, 1881, this office inspected and proved for the Georgetown Gas Light Company, and for consumers of gas in Georgetown, 95 meters. Of this number 18 registered fast, average error 3.60 per cent.; 22 registered slow, average error 9.01 per cent.; 49 registered within the limits allowed by law, namely, 2 per cent. either way; and 6 did not register the gas flowing through them.

S. CALVERT FORD,

United States Inspector of Gas and Meters for the District of Columbia.

TABLE E.—*Number of meters brought to this office, and complained of as incorrect, during the past seven years.*

Date.	Whole number of meters.	Fast meters.		Slow meters.		Correct meters.	Meters that did not register.
		Number.	Per cent.	Number.	Per cent.		
December 1, 1874, to June 30, 1875.....	100	42	5.50	9	12.84	49	
July 1, 1875, to June 30, 1876.....	178	43	5.54	51	18.22	84	
July 1, 1876, to June 30, 1877.....	293	40	4.24	155	21.69	73	25
July 1, 1877, to June 30, 1878.....	214	36	5.51	97	12.35	63	18
July 1, 1878, to June 30, 1879.....	292	53	4.51	133	11.97	87	19
July 1, 1879, to June 30, 1880.....	183	29	5.84	82	13.09	55	17
July 1, 1880, to June 30, 1881.....	170	20	3.62	77	9.75	43	30
	1,430	263	*4.96	604	*14.27	454	109

*Average.

S. CALVERT FORD,

United States Inspector of Gas and Meters.

588 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

TABLE F.—Pressure of the gas supplied by the Washington Gas Light Company, as registered in this office from July 1, 1880, to June 30, 1881.

Month.	Mean pressure expressed in inches.	Maximum pressure expressed in inches.	Minimum pressure expressed in inches.
1880.			
July	1.027	1.510	.700
August	1.015	1.250	.530
September	1.052	1.285	.675
October	1.025	1.250	.575
November .....	.982	1.300	.525
December	1.029	1.400	.700
1881.			
January	1.050	1.440	.600
February .....	.993	1.275	.600
March .....	.928	1.315	.570
April .....	.987	1.340	.700
May .....	.969	1.340	.770
June	1.003	1.270	.600
Twelve months	12.090		

Average: mean pressure, 1.007 inches; maximum pressure, 3.250 inches; minimum pressure, .55 inch.

REMARKS.—The pressure on the main at this point is .2 inch less than recorded above.

S. CALVERT FORD.

United States Inspector of Gas and Meters for the District of Columbia.

b.—ESTIMATES FOR TELEGRAPH AND TELEPHONE SERVICE.

TELEGRAPH AND TELEPHONE SERVICE.

One general superintendent	\$1,800 00
Three electricians, at \$1,200 each	3,600 00
Three telephone operators, at \$720 each	2,160 00
Two repair men, at \$720 each	1,440 00
One laborer	400 00
General supplies and repairs of batteries	5,630 00
Purchase of new poles, wire insulators, call boxes, switch boards, annunciators, lightning arresters, push buttons, making new connections and repairs	3,000 00
Rent of telephones	700 00
Total	18,730 00

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SUPERNUMERARY SECRETARIES OF LEGATION.

M E S S A G E

FROM THE

PRESIDENT OF THE UNITED STATES,

TRANSMITTING

A communication from the Secretary of State, setting forth the expediency of organizing a class of supernumerary secretaries of legation.

DECEMBER 19, 1881.—Referred to the Committee on Foreign Affairs and ordered to be printed.

To the House of Representatives:

I transmit herewith to the House of Representatives, for the consideration of Congress, a communication from the Secretary of State, setting forth the expediency of organizing a class of supernumerary secretaries of legation to meet the needs of our diplomatic service abroad.

CHESTER A. ARTHUR.

WASHINGTON, *December 19, 1881.*

To the President:

Before quitting the office I hold, I have the honor to lay before you a suggestion which I am satisfied is needed by the interests of our diplomatic service abroad.

On several occasions in the past, grave questions of public policy toward friendly nations have been checked in their discussion and settlement by the illness or death of the minister to whose care they were commended. And, more than this, the operations of the legation in such cases have been paralyzed by the absence of any diplomatic substitute, the archives and the property have been left in the hands of irresponsible strangers, and months have necessarily passed before the diplomatic representation of the government could be resumed by sending out a new minister to a distant field of duty.

Such complete interruption of our relations with a friendly state can rarely occur except in the case of legations to which no secretary is assigned. Where such an officer is provided, he is, under international law, invested with representative functions, which may be assumed on the death, absence, or disability of the head of the mission, thus permitting the functions thereof to continue, under responsible control, without

intermission. In the absence of provision for a secretary, the minister, alone and without support of any kind, has no one to aid him in emergencies, or to take his place if need be.

A cogent illustration of this state of things is found at present in Chili. The sudden death of the minister plenipotentiary, at a critical juncture in the relations of the United States with that power, leaves matters in a deplorable state of confusion, which would not have been the case had there been a responsible secretary of legation to competently succeed to the vacant office as the recognized *chargé d'affaires ad interim*.

It has long been the opinion of the Department of State that the missions of the intermediate grades should, like those of higher classes, be allowed secretaries of legation. Under the present apportionment, twelve out of the thirty legations of the United States in foreign capitals are allowed secretaries of legation. Of these, the legations at London, Paris, and Berlin have two secretaries each, as missions of the first or \$17,500 class. The legation at St. Petersburg, although also of the first class, has one secretary. Of the second-class missions, carrying \$12,000 salary, all have secretaries allotted, namely, at Vienna, Rio de Janeiro, Peking, Rome, Tokyo (or Yeddo), Mexico, and Madrid. Besides these, the legation at Constantinople, although only a resident mission, with \$7,500 salary, is, by statute of February 22, 1873, allowed the services of the consul-general at that port as *ex officio* secretary of legation.

The remaining missions are unprovided with secretaries. Of these, three are missions of the \$10,000 grade, namely, Central America, Chili, and Peru; seven are missions of the \$7,500 grade, namely, Argentine Republic, Belgium, Colombia, Hawaii, the Netherlands, Sweden and Norway, and Venezuela; four are in the hands of commissioned *chargés d'affaires* at \$5,000 salary, namely, Denmark, Paraguay and Uruguay, Portugal, and Switzerland; three are combined missions-resident and consulates-general, namely: Bolivia [\$5,000], Hayti [\$7,500], Liberia [\$4,000]; and one, recently created at Bucharest, is of the unusual grade of *chargé d'affaires* and consul-general, with a salary of \$4,000.

Of these eighteen missions, however, the four last mentioned, being also consulates-general, are provided with vice-consuls who, in an emergency, are competent to assume full charge of the consular office, and, by courtesy, to perform diplomatic functions; thus leaving, in all, fourteen missions where the minister has no assistant or substitute. Seven of these fourteen are on the American Continent, and, in view of our intimate relations of friendship and the growing needs of commercial development, are all of importance in the maintenance of the distinctively American policy which should, on all occasions, be the aim of the United States. They are the missions to Chili, Peru, Central America, Colombia, the Argentine Republic, Venezuela, and Paraguay and Uruguay. At all of these a secretary of legation would be a great convenience, while as far as Chili, Peru, and Central America are concerned, I regard the appointment of such officers as indispensable to the public interests. In view, also, of the onerous labors which devolve upon the representative of the United States at Berne, in connection with questions of naturalization and of assisted criminal emigration, I think that Switzerland should be added to the list of missions where a secretary is necessary.

This brings me to the second part of my subject, namely, the mode of making these desirable appointments and the proper compensation therefor.

For many years the statute has made the salary of a secretary of

legation depend upon the amount of the minister's salary, fixing it at fifteen per cent. of the sum paid to the chief of the mission. Thus, the first secretaries at London, Paris, Berlin, and Saint Petersburg receive \$2,625 each, or fifteen per cent. of \$17,500, the amount paid to the ministers there; and the secretaries at Vienna, Rio, Rome, Mexico and Madrid received \$1,800 each, or fifteen per cent. of \$12,000. The exceptions are the payment of \$2,000 annually to the second secretaries at Paris, London, and Berlin, and the allowance of \$5,000 to the secretary and interpreter at Peking, and \$2,500 to the secretary at Yeddo.

It is evident that an allowance on the basis of fifteen per cent. of the minister's salary to the officers whose appointment I deem advisable would involve as wide discrepancies between the rank and the pay as is found in the cases of the ministers themselves. The pay of the secretaries, on such a computation, would vary from \$1,500 at Santiago or Lima to \$750 at Berne.

A convenient alternative, however, suggests itself to my mind.

The experiment of appointing a regular class of commissioned consular clerks has been attended with such admirable results as to warrant the recommendation that a like experiment be tried in the diplomatic service. A limited corps of eight or ten diplomatic clerks might be organized, of whom four or five might be commissioned as third secretaries of Legation, and the rest as second secretaries of legation, with the respective salaries of \$1,200 and \$1,400. These offices, being commissioned by the President, by and with the advice and consent of the Senate, would possess diplomatic rank, functions, and privileges, thus attracting to them a higher grade of education than could rightly be expected in the case of ordinary clerkships with equally low compensation. Proper examinations and conditions, such as a fluent knowledge of French and at least one other modern tongue, would insure the admission of the proper order of talent to the lower grades, from which promotion to the higher secretaryships could be made, in time, at the discretion of the President. The secretaries of the second and third classes should be unassigned to specific missions, but their employment at such posts as might be deemed necessary should be left to the discretion of the Secretary of State; and finally, to whatever post assigned, these officers, through their diplomatic rank, would be competent to act in emergencies as *chargé d'affaires ad interim*.

I do not wish it to be thought that I recommend the erection of a regular diplomatic service, with life tenure and promotions, extending through all the grades. This is simply a proposal to appoint and train diplomatic clerks, as consular clerks have for several years been successfully appointed and trained; the sole difference being that, as the functions are diplomatic, the rank and title of the appointees must needs agree therewith.

I might enlarge upon the conveniences and advantages of the innovation I propose, but it is sufficient for my present purpose to characterize it as well adapted to promote the intimacy and usefulness of our relations with friendly states, and especially those of the American continent, and as absolutely necessary to prevent unforeseen and embarrassing interruption of such intercourse. I trust that it may be laid before Congress for due consideration.

Respectfully submitted.

JAMES G. BLAINE.

DEPARTMENT OF STATE,
Washington, December 19, 1881.

WILLIAM H. DAVIS.

LETTER

FROM

THE SECRETARY OF WAR,

IN RELATION TO

The claim of William H. Davis.

DECEMBER 21, 1881.—Referred to the Committee on Appropriations and ordered to be printed.

WAR DEPARTMENT,
Washington City, December 13, 1881.

SIR: In pursuance of the act of Congress approved March 3, 1881, entitled "An act for the relief of William H. Davis," I have the honor to report that the investigation thereby directed to be made has been completed, and that the result thereof is embodied in a report of the Quartermaster-General of the United States Army, a copy of which is herewith transmitted, together with copies of the papers on which it is based.

In further pursuance of the above-mentioned act, I have the honor to recommend that the authority of Congress be given for the payment to said William H. Davis of the sum of \$3,000, with interest thereon from the 1st day of February, 1862, at the rate of six per centum per annum, in full satisfaction of his claim arising out of the matters referred to in the said act.

Very respectfully, your obedient servant,
ROBERT T. LINCOLN,
Secretary of War.

The SPEAKER .
of the House of Representatives.

WAR DEPARTMENT,
QUARTERMASTER-GENERAL'S OFFICE,
Washington, D. C., November 25, 1881.

SIR: I have the honor to inclose testimony and report, in the case of William H. Davis, by the chief quartermaster of the Division of the Pacific, who was directed to make the investigation required by the law of March 3, 1881.

I am, very respectfully, your obedient servant,
M. C. MEIGS,
Quartermaster-General, Bvt. Major-General, U. S. A.

The Hon. the SECRETARY OF WAR.

[First indorsement.]

Respectfully returned to the Quartermaster-General.

The Secretary of War requests report upon the matters of fact required by the private act approved March 3, 1881, chapter 200, together with the conclusions at which the Quartermaster-General may arrive, after consideration of the evidence, upon the questions as to—

The title of the property and the incumbrances thereon, the status of the owner, whether loyal or not, the value of the property destroyed, the circumstances of the destruction, and by whose direction, authority, or permission it was destroyed, and the reasons for the neglect to give notice to the War Department at or soon after the destruction occurred.

By order of the Secretary of War.

H. T. CROSBY,
Chief Clerk.

WAR DEPARTMENT, *November 29, 1881.*

[Second indorsement.]

WAR DEPARTMENT, *December 9, 1881.*

Respectfully returned to the Quartermaster-General, with request for a copy of these papers, as soon as possible, for the House of Representatives.

By order of the Secretary of War.

H. T. CROSBY,
Chief Clerk.

WAR DEPARTMENT,
QUARTERMASTER-GENERAL'S OFFICE,
Washington, D. C., December 5, 1881.

SIR: I have the honor to return the papers in the case of the claims of W. H. Davis, of California, for value and damages resulting from the alleged destruction of a wharf at San Diego, Cal., by troops of the United States in 1861-'62, with report of my conclusions thereon, from the investigation ordered by Congress in the act of March 3, 1881.

I am, very respectfully, your obedient servant,

M. C. MEIGS,
Quartermaster-General, Bvt. Major-General, U. S. A.

The Hon. SECRETARY OF WAR.

WHARF AT SAN DIEGO.

The history of this case appears to be as follows, viz:

In 1850-'51 Mr. W. H. Davis, then wealthy and suffering from exhaustion through overwork in the new and rapidly-growing city of San Francisco, was ordered by his physician to San Diego, which is still a place of resort in such cases. The climate and the rest proved beneficial, and he, after a time, joined with other persons in making investments in land and laid out a town site upon the deep-water shore of the harbor of San Diego, then and now probably the best harbor on our Pacific coast south of San Francisco.

The Southern Pacific or Transcontinental Railroad was then being

discussed, and he and his partners anticipated its early commencement. As the moneyed man of the company, he built a wharf, which is shown to have been a good and large one, receiving from the company with which he was interested, in fee-simple, a portion of the town site granted under the then prevailing Mexican law, one of the conditions of the grant being that a wharf should be constructed within a certain time named.

The great commerce in supplies for construction of the Transcontinental Railroad did not spring up. But there was sufficient trade in the products of the valleys finding their natural outlet at San Diego to pay the proprietor of the wharf a net revenue of about \$1,800 a year for the next ten years.

Shortly after the completion of the wharf Mr. Davis was reduced to poverty by the loss of over \$700,000, according to his own statement to me, in the great fire in San Francisco of May, 1851. From that date he has led a life of struggle and privation.

In 1861 the United States regular troops stationed at San Diego Barracks were relieved by a force of California volunteers.

It is alleged that the winter of 1861-'62 was of unexampled severity, not in temperature, but that a greater quantity of rain than known in the memory of man fell during that winter throughout the Pacific coast of California, and that at San Diego so great was the fall and the saturation of the earth that for months the roads and the country, which is open prairie, were impassable, not only to loaded vehicles, but to men on horseback.

In this state of the weather and of the land it is alleged that it was impossible to procure fuel, which of good quality grows only at a distance of from 8 to 20 miles, and that the soldiers, suffering from want of fuel, destroyed the wharf and reduced it to such condition that it proved a total loss to the owner; that his revenue, theretofore \$150 a month, ceased; that he has never since derived any benefit from it, and that it has disappeared entirely, a few piles projecting from the sands alone remaining. Other wharves were built, but apparently not till 1869, and they have proved very profitable to the owners.

The testimony taken is voluminous and very contradictory.

Men were called upon to testify from memory of things which occurred twenty years before their testimony was taken, and naturally their recollections are vague, and they greatly differ as to the facts and as to the condition of the wharf at certain dates.

Some cotemporary documentary evidence, however, is found.

1st. As to the rainfall, upon whose excess is predicted the statement as to the condition of the roads and the time during which they were impassable.

The Army Meteorological Register, published by the War Department in 1855, gives certain rain charts from the observations made at military posts by medical officers of the Army. These charts give as the average rainfall of San Diego for the three winter months, 7 inches.

The inclosed memorandum, which I procured from the Surgeon-General's Office, shows that the rainfall of winter of 1861-'62 at San Diego, was in December, 1861, 2.91 inches; in January, 1862, 7.55 inches; in February, 1862, 1.85 inches—total, 12.11 inches, which exceeds the average of these three winter months by 5.31 inches.

The average monthly rainfall in winter is $\frac{7}{4}$ or 2 $\frac{1}{4}$ inches. Therefore the rain-fall of December, 1861, was not excessive, nor was that of February, 1862, greater than usual. The rainfall of the month of Decem-

ber however, was for that locality very heavy, exceeding by .55 of an inch the average in total rainfall of the whole winter.

At San Diego the winter climate is mild, and fuel is needed principally for cooking.

The quantity of fuel used by the garrison appears, from the records of payments therefor in the office of the Third Auditor, to have been about 22 cords—22 cords per month.

Major Bates, then Captain Bates, United States Infantry, in his testimony, verified by the records of Third Auditor, states that while he was upon duty at San Diego, fuel was supplied in plenty; that he turned over to his successor, Lieutenant Thompson, California Volunteers, acting assistant quartermaster, about 18 cords of wood, and that he left the post for the East on the 23d of November 1861.

The records show that on the 1st November, 1861, Captain Bates transferred to Lieut. W. A. Thompson 18½ cords of wood, and for this quantity Lieutenant Thompson has duly receipted. Therefore there can be no question that the garrison was fully supplied with fuel by the Quartermaster's Department for the month of November, 1861.

The next delivery of wood, or rather the next purchase of wood for San Diego Barracks which is found of record in the Third Auditor's Office, is 23 cords, costing \$109, bought of G. P. Tibbets, and paid for on the 31st January, 1862, by Lieut. W. A. Thompson, A. A. Q. M.

The next purchase is of 43 cords of wood, \$204.25, from same person, paid for on 31st March, 1862.

The price paid for this wood does not indicate any great scarcity of fuel, or any great difficulty in the delivery. The latter purchase, however, appears to have been of a two months' supply, and it may reasonably be inferred that it was in payment for fuel used during the two months, either of February and March, or of March and April.

No further purchase is found on record until 6th June, 1862, when 20 cords were paid for, and on 30th June, when 16 cords were paid for. The next purchase on record is dated 20th September, 1862, 50 cords.

Hence it appears that there was on hand 1st November, a sufficient supply to last till about 1st December, 1861; that the next payment is of 31st January, 1862. This wood must have been delivered from time to time during the month of January, and finally paid for at the close of the month, which is customary.

It appears, therefore, probable that from 1st December to some time in January there was a scant supply of fuel purchased and delivered by the Quartermaster's Department, and that the soldiers may have been compelled by necessity to procure brushwood from the chaparral on the islands to eke out their scanty supply, or if that proved insufficient to take up part of the covering of the wharf. Testimony as to this is contradictory, but I believe that some fuel and probably some fencing and well-curb were got from the planking of the wharf.

If the wharf was in the dilapidated condition asserted by many witnesses, its liability to such depredation was greater than if it was in good order and sound condition.

The wharf was so important to the town, being apparently at the time and for many years the only wharf in its harbor, that any injury done to it by tearing up its roadway and using it for fuel or for any other purpose would make a great impression upon the town's people, and they would be liable to exaggerate the injury done.

As the quantity of fuel needed for a month's supply appears to have been about 22 cords, which is equal 33,792 feet, board measure, of timber, it appears that if the troops depended entirely upon this source of

supply for their fuel during the month of December and one-half the month of January, they would have used 46,688 feet of timber, board measure.

Of 3-inch plank covering the wharf, I found that there were in place, if the covering was all there, 204,500 feet, board measure, and therefore taking up one-fifth of this covering would have furnished all the fuel that was probably needed in that time.

Soldiers do not undertake severe labor for purposes of wanton destruction, and the least laborious method of getting fuel from the wharf was to take up the planking. I do not therefore, think it probable that any great injury was done by them to the capping, bracing, and piles, all of heavy timber, and more securely fastened than the plank covering and more difficult to take away.

The removal of one-fifth of the plank covering would have made a part of the wharf impassable for carts and horses. But it would not have destroyed the wharf.

At \$30 per M, 46,688 feet of plank cost only \$1,400. Its cost laid on the wharf at a place where skilled labor was scarce and costly may have been \$2,800, and I think that the value of the material taken from the wharf by the troops for fuel cannot have exceeded this sum. The wharf has disappeared, except some piles.

The failure of the great expectations of commerce and of growth of population at San Diego, discouraged others from repairing it. The proprietor, it appears well established, was himself in no condition to repair it, and it probably gradually went to ruin. It was not till 1869, so far as appears, that another wharf was built at San Diego.

Had the Davis wharf been maintained in good condition till 1869, seven years later, it is well shown that it would have been worth \$60,000, and that it would have yielded a good revenue. Then the prospects of building the Southern Pacific Railroad started up again, and the town began to increase. Of that road I understand that at length, in 1881, some miles leading out of San Diego are open.

As a result of the investigation, I am of opinion that

1st. The title of the property is in W. H. Davis, the claimant. No incumbrances thereon have been discovered.

2d. The owner was loyal.

3d. The value of the lumber taken for fuel did not exceed \$3,000 as material.

4th. There was an unusual rainfall in December, 1861, and January, 1862, which probably rendered it difficult to haul fuel for the garrison, and this led the garrison to use a portion of the material on the wharf for fuel. The wharf being thus injured, they may have used a small quantity also for fencing, and one or two shallow wells may have been supplied with wooden curbs from the same source.

5th. The commanding officers Capts. Thomas E. Roberts and W. F. French, California Volunteers, were present, and as the wharf material could not have been taken up and burned in the barracks and quarters without their knowledge, they must be held accountable for whatever depredation was actually committed by the troops.

6th. The reasons for not notifying the War Department at or soon after the injury was done are to be found in the impoverished condition of the claimant; his absence at a long distance from San Diego; the slow communication by mail between San Diego and that part of California in which he then resided; and also in the fact that the War Department when the mischief was done had no power to relieve him by payment of damages.

The Quartermaster's Department could have paid for the value as fuel of whatever plank or timber he might have proved to have been taken and used, but no officer of the government had the right to pay for damages.

7th. While the value of the material used is stated above as not over \$3,000, the wharf itself, which I do not find to have been destroyed, but only injured by the troops, cost over \$60,000, gave a net revenue of \$1,800 per annum, which is 6 per cent. on a capital of \$30,000, and had it been maintained for seven years longer, i. e., till 1869, would then have been worth \$60,000.

M. C. MEIGS,

Quartermaster-General, Bvt. Major-General, U. S. A.

QUARTERMASTER-GENERAL'S OFFICE,
Washington, D. C., December 5, 1881.

SUMMARY OF EVIDENCE IN THE CASE OF WM. H. DAVIS, SAN DIEGO, CAL., FOR ALLEGED DAMAGE TO WHARF AND WAREHOUSE, BY U. S. TROOPS, DURING THE WINTER OF 1861-'62, STATED AT \$60,000.

QUARTERMASTER-GENERAL'S OFFICE,
November 23, 1881.

The investigation was made through this department by Lieut. Col. Rufus Saxton, chief quartermaster Military Division of the Pacific, in compliance with an act of Congress, private bill No. 106, approved March 3, 1881 (page 37).

The case was referred by the War Department to this office, April 5, 1881, and on the 8th following referred to Colonel Saxton for investigation, and returned by him to this office, with the evidence collected, on the 12th instant. According to the said act evidence was collected under the following heads, viz:

1st. *Title and incumbrances.*

The title of the claimant in the said property is not questioned by any of the witnesses. The said wharf and warehouse were built by the claimant in 1850-'51, at his own expense, and he remained the owner of the said property until its alleged destruction by the United States Army in the winter of 1861-'62.

Colonel Saxton further states, on this subject (page 4, of his letter of the 12th instant), that, by the records which he saw of the assessor's office of San Diego, Cal., the said property was assessed in Mr. Davis's (claimant's) name, for taxes for several years before 1861. No incumbrances appear to have been on the property.

2d. *Status of claimant, whether loyal or not.*

The loyalty of claimant during the late rebellion is fully and conclusively proven by the evidence as it appears on page 11,* Wm. Sherman; page 12, J. J. Warner; page 13, Charles Thorn; page 46, Wm. F. Swasey; page 49, O. C. Wheeler.

J. B. Metcalf, esq., attorney in the case, also invites attention to testimony of loyalty on file with the Committee on War Claims, House of Representatives, given by the gentlemen named on page 129.

In this connection, it is proper here to consider claimant's relation to the United States prior to the late war. He conveyed to the government (page 102 and map), by deed of gift, all the property now owned by the United States, valued at \$40,000, in New San Diego, Cal., and also the franchise of his own wharf, for government purposes, up to the time of its destruction in 1861-'62.

3d. *The value of the property destroyed.*

It is alleged by the claimant (page 2, sec. 4) that the actual cost of construction of the said wharf and warehouse in 1851 amounted to \$60,000 in United States gold coin, and that, owing to the large increase in traffic at the port of San Diego since 1868, he, on account of the destruction of his property in 1861-'62, sustained damage, to present time (December, 1874), to the full amount of \$121,200 in coin (page 10). The evidence on this point is very full and clear, and shows that the wharf and warehouse were substantial and costly structures, made of the best material. Practical

* Page references refer to printed brief.

and experienced constructors of wharves on the Pacific coast, and who were familiar with the Davis wharf, estimate its value from \$60,000 to \$80,000. (Pp. 12, 13, 18, 20, 32, 42, 49, 50, 122, 124, and 126.)

The actual value of the property in 1861-'62 is estimated by the witnesses at not less than \$40,000, and A. E. Horton (p. 51-'3), a practical constructor of wharves, &c., states that he would have given \$60,000 for the said wharf and warehouse, in 1869, had it been in existence at that time.

It seems proper here to consider the condition of the said property at the time of its alleged destruction, on which point the evidence is much at variance, but the preponderance of the testimony appears to show that the said wharf and warehouse were in good repair and in serviceable condition in 1861-'62.

It is claimed by some of the witnesses that the wharf was in a dilapidated and rotten condition in 1861; that the "teredo" had damaged the piles of the wharf; that it was not considered safe to land troops or freight on it; that it had been considerably damaged previous to 1861 by steamers running into it; and by a severe storm in 1858 or '59—carrying portion of the wharf away, &c. Pp. 55, 60-61, 64-5-68, 70-72, 76-77, 83-87, 91-2, 105-106-7-8, and 110-111.)

On the other hand, it is held that the said wharf and warehouse were in good, serviceable condition from the time they were constructed until destroyed in 1861-'62; that the wharf had suffered no material damage up to that time, and that the "teredo" had made no impression on the red-wood piles of the wharf; that it was critically examined by experts, and found to be in a healthy and serviceable condition in 1861; and that some of the piles, not used, or taken by the military, were withdrawn, found to be perfectly sound, and were used in the construction of another wharf at San Diego, in 1869. (Pp. 34-35, 56-57, 58-59, 60-62, 76-77, 96-98-99-101, 106, 108-110, 114-119-123, and 125-127.)

4th. Circumstances of the destruction, and by whose direction, authority, or permission it was destroyed.

The evidence on these points is quite voluminous, and differs as to the fact whether the said property was actually taken by, and for the use of, the Army, as alleged.

Officers and other members of the same commands stationed at the post of San Diego, at the same time, differ in their testimony. Some testify that none of the material of the said property was taken by the troops, in which respect the evidence of C. V. Kellogg (pp. 126-127) and Lieut. G. C. Smith (pp. 76-81) is the most important. (See also pp. 68, 83-88, 106-108, and 110-113.) It is admitted by these witnesses that, although no fuel being at the post during the rainy season of the winter of 1861-'62, no piles and lumber of the said wharf was taken by the troops; but that wood in the shape of chaparral or brush-wood was procured from an island in the Bay of San Diego by details from the commands.

By other officers it is positively affirmed, and well corroborated by evidence of resident witnesses and others, that the troops did demolish the said property and used the material for firewood and other purposes. That no fuel being at the post and no wood, the nearest being from 8 to 20 miles (p. 19), being obtainable from the surrounding country, on account of the impassable condition of the roads, the seizure of the said property for the use of the Army became a military necessity, and was so ordered and countenanced by the commanding officers of the troops, and that some of the material was also used for building purposes at the post. That, finally, the destruction of the property by the Army was notorious and the common talk of the people of San Diego. (See pp. 12-17, 19-23, 25-29, 39-42, 47-48, 54-55, 58-60, 62, 73-76, 91-94, 96-98, 108-109, 113-114, 115-116, and 117-120.)

The evidence *pro* and *con* is unanimous as to the fact of the impassable condition of the roads about San Diego for teaming for at least three months in the winter of 1861-'62. This, together with the inability of the troops to draw their necessary supply of firewood from the surrounding country, and the collapse of the wood contract for the said post at that time (p. 54), seem to furnish an important and plausible factor in his claim. The fact, then, that some of this property was authoritatively and properly appropriated by and for the use of the Army appears to be borne out by the weight of evidence for the claim.

Claimant asks compensation for damage resulting from the destruction of his property by the Army. How much of his property was actually taken by said Army is not clearly established by the evidence; but it fairly shows that a large portion of it was so taken, and that the commencement of the demolition of the wharf and warehouse finally resulted in a total loss.

Particular attention is respectfully invited to the evidence of B. T. Catlin, formerly private Company E, First California Infantry (pp. 83-88, 105-106 and 128), who, it appears, was quite active and persevering in hunting up and inspiring evidence against the claim, for the reason, as is stated, to defeat the re-election to Congress of the Hon. H. F. Page, of California, who introduced the bill for the relief of the claimant, and who, Catlin believed, was pecuniarily interested in the claim; in which connection see evidence on pp. 80, 90, 94-95, 124-125.

5th. *The reasons for the neglect to give notice to the War Department at or soon after the destruction occurred.*

Claimant gives, as his reasons for not submitting the claim sooner (pp. 56 and 102), that he believed that Congress was the only tribunal that could afford him relief in the premises, and that he thought it incumbent on him to furnish the necessary evidence, and that he pursued this course upon legal advice (pp. 29-30).

Further, that as his witnesses lived scattered and at great distances from each other, and as he was financially unable, on account of business reverses, to defray the expenses in reaching his witnesses, he could only proceed with the case as he received assistance from time to time from his friends.

The Third Auditor of the Treasury, under date of October 1, 1861, by letter, not returned by Colonel Saxton with his report of the 12th instant, but which has been called for since and of which the following is a synopsis, reports the following payments for wood purchased for the use of United States troops at New San Diego, Cal., from July 1, 1861, to September 20, 1862, viz:

From Crothwait and Anderson:

July 1, 1861. 17 cords 4-foot wood \$350 00
From G. P. Tibbetts:

(See page 54 of printed brief.)

August 8, 1861. 10 cords wood.....	47 50
Sept. 1-27, 1861. 17 do.	84 31
October 31, 1861. 20 do.	95 00

Purchased by Lieutenant Bates, Fourth Infantry, A. A. Q. M.

From G. P. Tibbetts:

January 31, 1862. 23 cords wood..... 109 00

Purchased by Lieut. W. A. Thompson, First California Infantry, A. A. Q. M., who reports "December 18, 1861, this office received from Capt. R. W. Kirkham, Q. M., at San Francisco, Cal., 5,700 feet lumber," and expends, per abstract L, January, 1862, 325 feet for building a boat to haul wood across the bay, from the island.

From G. P. Tibbetts:

March 31, 1865. 43 cords wood.....	\$204 25
June 6, 1862. 20 do.	95 00
June 30, 1862. 16 do.	96 00

And from Wm. Evans:

Sept. 20, 1862. 50 cords..... 200 00

by Lieut. Milton S. Glasby, Fifth California Infantry, A. A. Q. M., making a total of 216 cords, at \$966.06.

The Auditor further says "no other purchases of fuel of any kind from July 1, 1861, to September 30, 1862, no purchases from Geo. A. Pendleton (claimant's agent at San Diego). Nothing to show that these purchases were made under contract."

It will be seen by the above dates that no wood appears to have been purchased at the said post from October 31, 1861, until January 31, 1862 (three months).

Respectfully submitted to the Quartermaster-General.

Colonel Saxton made no summary showing the result of or conclusions reached by him on the investigation.

The act of Congress under which the investigation is being made requires that "when such investigation shall be completed, the Secretary of War shall report the result thereof, with his recommendation thereon, to Congress for action in the premises.

The testimony taken indicates the following result, viz:

1st. The title to the property unincumbered in claimant established.

2d. Loyalty of claimant to the United States established.

3d. The testimony taken is to the effect that the wharf destroyed was reasonably worth \$60,000, though there is considerable testimony that on arrival of the troops at San Diego in October, 1861, the wharf was in a very dilapidated or decaying condition, not safe for vessels to moor to.

4th. The circumstances of the destruction, and by whose direction, authority, or permission the property was destroyed, are left by the testimony in great doubt. Some indefinite quantity of material is reasonably shown to have been used by the United States troops; whether the wharf became unserviceable before or after the taking and use of his material is also in doubt.

5th. The reasons for the neglect to give notice to the War Department at or soon after the destruction are stated by claimant to be that he believed Congress to be the proper tribunal, and that he was in want of means to procure testimony, &c.

JAS. M. MOORE,
Quartermaster, U. S. A.

DECEMBER 3, 1881.

The substance contained in the following communications is not embraced in printed brief, nor in the above abstract, viz:

May 25, 1881.—Reply of Col. Granville O. Haller, Twenty-third Infantry, dated Fort Dodge, Kans., to letter of Col. Rufus Saxton, deputy quartermaster-general, &c., of the 18th previous. Colonel Haller states that he sent said letter to Bvt. Maj. Francis H. Bates (retired), at Georgetown, D. C., for more perfect information regarding condition of the "Davis wharf" at New San Diego, Cal. He further states that he arrived at said place with his company in June, 1861, and sailed for New York in November, same year, turning the command of said place over (he thinks) to Captain Thompson, commanding an infantry company of California Volunteers. That the United States barracks were located in New San Diego, about 3 miles below the old town, on the south side of the bay, but that the new town was literally deserted by the inhabitants, who owned the numerous buildings around the military station. That there was there an enormous or gigantic wharf leading from shore to deep water, in a *dilapidated condition*, but that it could still be used and that it was used, if his memory is correct, by his company, when it embarked on the Pacific Mail Steamship Company's steamer for New York via Panama.* That the wharf was left in the condition they found, being very little, if any, changed by storm or tide, or wear or tear. That there might have been a warehouse or building used as such formerly, as there were many vacant buildings there at that time, but that the town, property, and wharf were apparently abandoned. No demand, he thinks, was ever made for wharfrage. He suggests a careful examination of the assessment and tax rolls of San Diego for 1859 to 1862, with reference to the ownership of the property there, and whether the owner considered the property worth the payment of the annual taxes. He further says that on account of the great quantity of lumber required, and the price of it at San Diego at the time, to construct such a wharf and warehouse, together with the cost of labor, he has no doubt that the original cost thereof was \$60,000, or nearly so, in coin.

In conclusion, Colonel Haller refers to a personal matter connected with this claim. While residing in Washington Territory he received from San Francisco a letter inclosing a copy of a deposition made by one "Manasses," which stated that on account of the great rainfalls there (Old San Diego) the garrison supply of wood gave out and could not be hauled for bad roads, and that his command were compelled to use the wharf lumber for fuel, and that he (Manasses) had seen fire in his (Haller's) stove made of this lumber, and that he was requested to make a similar deposition; that he replied that the deposition was without foundation, and gave facts to contradict it; that about two years ago he found a San Francisco newspaper had charged him with giving such a deposition, and used his own facts in proof of his perjury, whereupon he advised the honorable Secretary of War that if there was such a deposition with his name attached to it, it was a forgery, as he had never made a deposition on the subject.

June 15, 1881.—Lieut. Robert H. Fletcher, Twenty-first Infantry, incloses sketch prepared by Jos. Ossgood, chief engineer of California Southern Railroad, San Diego, Cal., showing condition of one of the piles of wharf at National City, Cal., driven in 1872 and sawed off in May, 1881, when brought to the surface. Mr. Ossgood, in reply of June 13, 1881, to inquiries of Lieutenant Fletcher, states that he has not been able to obtain trustworthy information as to the comparative resistance offered by different kinds of wood against the attacks of the "teredo," but finds that the redwood piles are less subject to attacks by these worms than the piles of pine wood, in corroboration of which he says that 90 per cent. of the pine piles in the wharf at National City, Cal., built in 1872, were found in 1881 to have been eaten in two, as per sketch, but that the bark is a perfect protection from the worms as long as it remains intact. He further says that the teredo does very little damage there to piles in the bay, but that a worm (name not known) which does the mischief resembles a shrimp much in appearance, and is generally from one-fourth to one-half of an inch long, and that its work extends to the mud, but is apparently most destructive between high and low water (see sketch). He is informed, he says, that pine piles cut in summer require to be renewed in the third year, and that winter-cut piles with bark on last from four to five years, but that the life of the piles has been lengthened a year or two by painting them once in six months with a mixture of asphaltum and coal tar. Unprotected, however, by bark or covering they show evidence of the entrance of the worm almost immediately after being driven, certainly within two months.

October 7, 1881.—B. T. Catlin, in letter to Colonel Saxton, states that from facts that have come to his knowledge since he gave his testimony in this case, he has thought that possibly said testimony might work injustice to the claimant, and that as his sole notion was to see justice done in the premises, he thinks it but right to make the following statement, viz:

"From evidence that I have seen, and from conversations had with officers and others who were in San Diego and claim to be cognizant of the facts in the case, the conviction has been forced upon me, that at some period, other than the time covered by my affidavit, damage was done to Mr. Davis's property by the troops sta-

* He left latter part of November, 1861.—M. C. M.

tioned at San Diego, though at what time I am unable to say. The position, character of the evidence, and the unimpeachable character of witnesses leave no room for doubt; and as I wish to wrong no man, my sense of justice compels me to say this much in favor of Mr. Davis. The discrepancies between my own evidence and that of others may be reconciled by taking into account the differences in the minds of different persons in regard to the recollection of dates."

The following information has been received at this office since the original abstract was made:

November 23, 1881.—Colonel Saxton returns, by letter, report of Third Auditor regarding purchases of wood for the troops at San Diego in the winter of 1861-'62, and commenting on the information says that it shows that no wood was purchased at San Diego from October, 1861, to January, 1862 (see additional report of Third Auditor of December 3, page 32). He also invites attention to evidence of G. P. Tibbetts stating that no wood was delivered by him at San Diego after July, 1861; while statement of Third Auditor shows that all the wood purchased from August, 1861, to June, 1862, was on vouchers made out in favor of Tibbetts. Also that 50 cords (\$200) were purchased on vouchers in favor of William Evans, September, 1862; who, it is said, purchased a portion of the Davis wharf from Pendleton, Davis's agent, &c.

November 28, 1881.—Colonel Saxton forwards for file with his report, two affidavits made by Paschall Magry and John Baker, dated respectively October 28 and November 1, 1881, and in which they substantially testify that in January, 1862, they were members of Company D, Fifth California Infantry; that they went with their company to San Diego, and were stationed there for about ten months from January, 1862. That when they arrived there there was an old wharf in a dilapidated condition near the buildings occupied by the troops, and that part of it, while they were there, fell down from natural decay and was carried out to sea by the tide; and further that neither the wharf nor any part of it was destroyed by the United States troops; that a quantity of wood was on hand in the quartermaster's corral, and corded up, when they came to the post, and which wood was used by the troops as fuel; that, moreover, a quantity of wood for the use of the garrison was cut on the island, near San Diego, and boated over to the troops for their use, &c.

December 1.—Memorandum of rainfall at San Diego, Cal., during the following months: December, 1861, 2.91 inches; January, 1862, 7.55 inches; February, 1862, 1.5 inches—12.31 inches in three winter months; March, 1862, 0.70 inch—13.01 inches in all four months.

From an examination of Abstract F and vouchers thereto, it is found that the following issues of fuel were made to United States troops, &c., by officers named, stationed at San Diego, Cal., for the periods stated:

By whom issued.	Strength of garrison.				Issues of fuel.			Remarks.
	Number of officers.	Enlisted men.	Servants and laundresses.	Total.	Cords.	Feet.	Inches.	
Lieut. F. H. Bates, Fourth United States Infantry. For August, September, and October, 1861.	5	153	14	172	23	5	4	Company I, Fourth United States Infantry. For hospital use (2 fireplaces).
Total number of cords.....	..	.....	.....	.....	25	1	4	
Lieut. W. H. Thompson, First California Volunteers. For December, 1861, and January, 1862.	4	205	4	213	41	8	4	Company —, First California Infantry, including 36 recruits for five days. For hospital use, voucher missing.
Total number of cords.....	..	.....	.....	.....	41	6	4	
Lieut. M. L. Glasby, Fifth California Volunteers. From March to September, 1862.	18	427	39	484	61	11	7	Company D, First California Infantry. Guard at post. Officers' mess (6 officers). P. W. Randle, assistant surgeon in charge of hospital. For hospital use at post.
Total number of cords.....	..	.....	.....	.....	75	0	11	

Dec. 3, '81.—Additional report of the Third Auditor, of purchases of wood at San Diego:

Purchased and paid for by Lient. W. A. Thompson, First California Infantry:
 Nov. 20, '61. From G. P. Tibbetts, 45 cords, @ \$4.75..... \$213 75
 Dec. 28, '61. From G. P. Tibbetts, 12 cords, @ \$4.75..... 57 00

Respectfully submitted to the Quartermaster-General.

JAS. M. MOORE,
Quartermaster, U. S. A.

QUARTERMASTER-GENERAL'S OFFICE, *December 5, 1881.*

PHILADELPHIA, PA., *November 12, 1881.*

GENERAL: I have the honor to return herewith your reference of the 8th of April, 1881, directing me to investigate, in compliance with private act No. 106 [chap. 200], approved March 3, 1881, the claim of William H. Davis, of Oakland, Cal., *vs.* The United States, for use of certain wharf and warehouse property at San Diego, Cal., alleged to have been used by troops of the United States in 1861-'62.

No papers connected with the claim were referred to me, but putting myself in communication with Mr. Davis, he placed at my disposal copies of his original petition to Congress and affidavits before Congress, and also presented new evidence in the case, as well as other papers bearing upon the subject.

Learning from some articles published in the San Francisco Chronicle early in 1880 that the claim had been denounced a fraud, I called upon the editor of that journal, and obtained from him a list of persons whose evidence he advised taking. He also gave me the address of the writer of the articles in his paper against the claim, Mr. B. F. Catlin, a clerk in the San Francisco naval office. Messrs. Catlin and Davis also furnished me the names of a number of persons who were supposed to have knowledge of the facts in the case; and on May 18, 1881, I sent to each of these parties, whom I could not see personally, a letter (copy inclosed, marked 1), requesting their testimony in the form of an affidavit as to their knowledge of the matter. I received but very few responses to this letter.

Desiring to verify the testimony of as many of the witnesses who had already testified as possible, and to place the evidence I could gather bearing upon the case in a convenient form for reference, I constituted myself a committee of investigation, employing one of my clerks as recorder. I held sessions at San Francisco, on May 2, 7, 8, and 9; at San Diego, June 7, 8, and 9; and again at San Francisco, July 21, August 25, September 1, 17, and 28, 1881.

In the case of all the previous witnesses who were yet alive, whose presence could be obtained, they verified their previous testimony, except in a few unimportant instances, where slight corrections were made.

There came also before the commission other witnesses, testifying both for and against the claim.

The fact that the witnesses were so widely scattered has made the investigation occupy a period of several months, but it was at last concluded on the 28th of September, 1881. At this time, Surgeon Baily, U. S. A., having ordered a change of climate as necessary to my recovery from a severe attack of rheumatism, I went on leave of absence, and this has delayed my final report until the present time.

I inclose herewith a full report of the proceedings of the commission (see inclosure marked 2), together with affidavits *pro* and *con* (marked Exhibits A to W, inclusive). I inclose also a tracing made in my office of a map of San Diego, on file in the engineer's office, Headquarters Military Division of the Pacific. This map shows the location of Davis's wharf and warehouse, as well as the location of the block now occupied by the United States military barracks and the government wharf site, which were given by Mr. Davis to the United States. It does not, however, show the location of another block given by Mr. Davis to the United States, and which is now used as a quartermaster's corral and stables. (See inclosure marked 3.)

In addition to my report of the proceedings of the commission of investigation, I submit the following as replies to the questions embraced in the act of relief, answering them *seriatim*.

1. *The title to the property and the incumbrances thereon?*

The title is not questioned. It is partially proved by the testimony taken, and the records of the assessor's office at San Diego, which I saw, showed the property to have been assessed in Mr. Davis's name for taxes for several years past before 1861.

2. *The status of the owner, whether loyal or not?*

The testimony is full and explicit on this point, and I have not heard Mr. Davis's loyalty questioned.

3. *The value of the property destroyed?*

The testimony shows the property to have been worth from sixty to eighty thousand dollars when built, and for some time thereafter, but it is greatly at variance as to its value in the winter of 1861-62.

4. *The circumstances of the destruction and by whose direction or permission it was destroyed?*

The evidence on this point is voluminous and is very contradictory. A large number of witnesses, including several ex-army officials, testify to the destruction of the property; while others, also including ex-officers and soldiers, testify to the reverse. A charitable explanation of this discrepancy in the evidence is that men's memories are not always to be relied upon after a lapse of eighteen years.

5. *The reasons for the neglect to give notice to the War Department at the time or soon after the destruction occurred?*

This point is fully answered by the testimony taken.

The sessions of the commission of investigation were open, and the most of the testimony was given orally, and recorded by my clerk. Mr. Davis did not employ a clerk or a stenographer, and shortly before the labors of the commission closed, his attorney, Mr. Metcalfe, asked me to furnish him, at his expense, a copy of the testimony taken and of all the affidavits printed, in order that he might make up his argument in the case. I was not certain that I had the authority to grant his request and advised him to apply to the War Department for permission, which he did. In the mean time, I allowed him to read my record and complete his argument in my office and to have the paper printed under the supervision of my chief clerk, no copies to be delivered until the Secretary of War should give the necessary authority. This has since been given, and printed copies similar to the one inclosed have been furnished the claimant's attorney, to which he has appended his own argument. I inclose this in addition as convenient for reference in making up your report on the case. In conducting this examination it has been my earnest endeavor to collect all the evidence possible bearing on the case, and to put it in such a form as to enable the department to come to a correct judgment.

In the hope that I have been in a measure successful,

I am, very respectfully, your obedient servant,

RUFUS SAXTON,
*Department Quartermaster-General, Chief Quartermaster
Military Division of the Pacific.*

The QUARTERMASTER-GENERAL, U. S. A.

MEM.]

WAR DEPARTMENT,
Washington City, March 31, 1881.

Hon. R. Pacheco, of California (by private secretary), requests special and early action under provisions of act approved March 3, 1881, authorizing the Secretary of War to cause to be investigated by the Quartermaster's Department the alleged taking by the United States authorities for use of the United States troops, during 1861 and 1862, of certain wharf and warehouse property in San Diego, California, alleged to have been the property of Wm. H. Davis, of Oakland, Cal.

[First indorsement.]

Respectfully referred to the Quartermaster-General to take such action as will carry into execution the inclosed law.

By order of the Secretary of War.

H. T. CROSBY,
Chief Clerk.

MARCH 31, 1881.

[Second indorsement.]

QUARTERMASTER-GENERAL'S OFFICE,
Washington, D. C., April 8, 1881.

Respectfully referred to Lieut. Col. Rufus Saxton, chief quartermaster, Military Division Pacific, San Francisco, Cal., for investigation of the claim in favor of William H. Davis, of Oakland, Cal., for use of a certain wharf and warehouse property, formerly situated in San Diego, Cal., in compliance with provisions of private act No. 106, copy inclosed.

M. C. MEIGS,
Quartermaster-General, Bvt. Maj. Gen., U. S. A.

In the matter of the claim of William H. Davis *vs.* The United States, for destruction of his wharf and warehouse at New San Diego, California, by United States troops, during the war of the rebellion.

PETITION OF WILLIAM H. DAVIS.

The honorable the Senate and House of Representatives of the United States of America in Congress assembled:

The petition of William H. Davis of the city of Oakland, county of Alameda, State of California, respectfully represents:

1st. That he is a citizen of the United States of America, and also a citizen of the State of California, where he has resided since the year 1833, and still resides.

2d. That he has ever been and still is loyal to the Government of the United States, and always has borne and still does bear true allegiance thereto.

3d. That in the year 1861 and 1862 he was the lawful owner, and in the actual, peaceable, and quiet possession of that certain property, situate in what was then designated and known as the New Town of San Diego, in the county of San Diego, State of California, described as follows, to wit:

One wharf, erected and then being upon block No. 20 of Gray & Johns' survey of said New Town of San Diego, and extending out into the waters of the Bay of San Diego to the depth of four fathoms at extreme low tide, constructed of wood, and of the following dimensions, to wit:

Being five hundred and fifty (550) feet in length, and fifty (50) feet in width, together with an addition or L thereto, adjoining the same at right angles at its water end, being two hundred and twenty-five (225) feet in length, fronting on said four fathoms of water aforesaid, by one hundred and forty (140) feet in width—the whole being constructed of piles, of redwood, of from thirty (30) to seventy-five (75) feet in length, and from fifteen (15) to twenty-eight (28) inches in diameter, substantially driven into the soil at a distance of six (6) feet apart, and thoroughly braced together with plank, and covered or overlaid with imported spruce and yellow-pine plank of from twelve (12) to fifteen (15) inches wide by three (3) inches thick, and together with a further addition or L thereto, adjoining the same at the shore end thereof, extending along Atlantic street four hundred and fifty (450) feet to Commercial street, constructed substantially of like piles and heavy planking and connecting the whole with the mainland.

Also, one warehouse, erected and then being on lot L, of block No. 32 of said Gray & Johns' survey of said New Town of San Diego, contiguous to and used in connection with said wharf, for the purposes of storage of goods and other articles landed thereat, constructed of heavy eastern timbers and imported spruce and pine plank, and being fifty (50) feet in length by thirty-two (32) feet in width, and two stories in height. The whole, both said wharf and said warehouse, having been built in the most substantial and thoroughly workmanlike manner.

4th. That the actual cost of the construction and completion of said property was the sum of sixty thousand (\$60,000) dollars in United States gold coin; that at the time aforesaid the same was in a good state of preservation and repair, and at that time was well worth the said sum of sixty thousand (\$60,000) dollars in said coin.

5th. That during said years, 1861 and 1862, the property aforesaid was demolished, destroyed, appropriated, and rendered utterly useless and valueless, by the troops or soldiers of that portion of the Army of said government, consisting of regular and volunteer forces in active service under the immediate command of Major D. O. Haller, Captains Thomas Roberts and William French, and other officers to your petitioner unknown, and stationed from time to time, during said years, 1861 and 1862, at said New Town of San Diego, which property was then and there so cut and torn down, carried away and used for building, fuel, and for other purposes, by said soldiers, against the repeated remonstrance and protest of one George B. Pendleton (since deceased), then and there the duly authorized and acting and recognized agent of your petitioner, and as such, being in full charge and control, and in the exclusive possession of the same for and on behalf of your petitioner; the winter of said years of 1861 and 1862 being the most remarkable in the history of said State of California, by reason of its excessive and unusual rainfall—the flooded and overflowed condition of the country and the impassability of its roads, and particularly so as to New San Diego and the section immediately surrounding it, so much so as to render it practically impossible for said troops or soldiers, in the absence of supplies on hand, as was the case, to provide from other sources the wood and lumber necessary to meet their wants for building, fuel, and other purposes.

6th. That, though often requested and urged to do so, yet said officers and soldiers have utterly neglected and refused to pay for the damages occasioned to your petitioner by the destruction and appropriation of said property as aforesaid, or to make any

remuneration or allowance or other settlement therefor whatever, to your petitioner or any one for him; nor has said government, nor any officer, agent, or other person whatever, for or on account thereof, made any payment or other settlement therefor to your petitioner or to any one for him.

Nor has your petitioner or any one duly authorized thereunto, for or on behalf of him, received payment or other compensation therefor or any part thereof, whatever.

Nor has your petitioner sold, transferred, or otherwise parted with said claim for said damages; but the whole thereof still remains due from said government, and owing to him.

7th. That your petitioner's said wharf was the only wharf then existing, or that had ever previously existed at said town of San Diego; and from the time of its construction in 1850 and 1851, to its destruction in 1861 and 1862, was the only wharf at which vessels of any kind entering or departing from the port or harbor of San Diego, could or did receive or discharge freight and passengers.

That, from all which, he collected and received wharfage, during said time, affording a net average profit of one hundred and fifty (\$150.00) dollars in United States gold coin, per month.

That after the destruction of said wharf and up to the year 1869, vessels so entering and departing from said port, were compelled to and did receive and discharge all freight and passengers at great inconvenience and expense, by means of lighters.

That by reason of the financial embarrassment occasioned to your petitioner at the particular time by the loss of his said property, he was unable either to rebuild the same or to build another in its stead, which fact, together with the demands of the shipping and commercial interests, induced other parties, in said year of 1869, to construct a similar wharf there and within two hundred and fifty yards of the site of your petitioner's said wharf.

Which new wharf, ever since its said construction, has yielded its owners, from wharfage, an average gross sum of eleven hundred (\$1100) dollars in United States gold coin, per month.

8th. That, at the time of the destruction of your petitioner's property as aforesaid, he was absent and several hundred miles distant from San Diego, but soon after receiving information from his said agent thereof, he proceeded to take the advice of able counsel as to his rights and the remedy in the premises, who instructed him to procure the affidavits of all parties cognizant of the facts and circumstances and present the same, with his claim, to Congress.

That, by reason of his said loss of property, and other serious business reverses about that time, he found himself so impoverished and reduced in circumstances, as to be unable to defray the expenses incident to traveling to San Diego and to other places at great distance, and in procuring the necessary evidence as advised.

That as soon thereafter as he was able to and did obtain some assistance through friends, he commenced the labor of securing said evidence; but, in consequence of his limited means and of the fact of some of the persons cognizant of the facts and circumstances having died, and others having removed from San Diego, and scattered to various parts of the country, making it difficult and expensive to find and to reach them, he has been greatly retarded in his efforts, and unavoidably delayed in getting his claim properly before your honorable body.

Wherefore your petitioner prays, that his said claim, together with the proofs accompanying the same, may now be received and duly considered.

That upon final consideration he be allowed and paid the said sum of sixty thousand (\$60,000) dollars in United States gold coin, together with legal interest thereon, in like gold coin, at the rate of ten per cent. per annum, from the first day of January, 1862, to the final allowance and payment thereof.

WILLIAM H. DAVIS.

STATE OF CALIFORNIA,

City and County of San Francisco, ss:

William H. Davis being duly sworn, deposes and says:

That he is the petitioner in the foregoing petition, and the claimant in the claim set forth therein; that he has read the same and knows the contents thereof. That the same is true of his own knowledge, except as to those matters and things therein stated on information and belief, and as to those matters and things, he believes it to be true.

WILLIAM H. DAVIS.

Sworn to before me, and subscribed to in my presence, this 28th day of September, 1877.

SOUTHARD HOFFMAN, [SEAL.]

Clerk U. S. District Court, Dist. of California.

AFFIDAVITS OF WILLIAM H. DAVIS.

STATE OF CALIFORNIA,

City and County of San Francisco, ss :

William H. Davis, being duly sworn, deposes and says :

That at the time he made his petition to Congress, on the 28th ult., in the matter of his claim against the government for damages for the destruction and appropriation of his wharf and warehouse, as therein set forth, he was not advised of some of the changes that have taken place at San Diego, California, within the past few years.

That on his recent visit to this place, he learned that the trade and traffic of that port had been transferred from the wharf first constructed after, and used in lieu of his wharf, so destroyed and appropriated, to another wharf lately erected there, about six hundred (600) yards from the site of affiant's wharf aforesaid.

That said last-mentioned wharf has since received all the business in that line from steamers and other vessels arriving at and departing from said port.

WILLIAM H. DAVIS.

Subscribed in my presence and sworn to before me this 22d day of October, 1877.

J. H. BLOOD, [SEAL,]
Notary Public.

STATE OF CALIFORNIA,

City and County of San Francisco, ss :

William H. Davis, being duly sworn, says that he is the same person who has and makes a claim against the Government of the United States for the destruction of his wharf at San Diego, California, by the military forces of the United States in 1861 and 1862.

That the reason why he has not earlier presented said claim is, that he has found it quite difficult to obtain the evidence of witnesses who knew the facts, inasmuch as they were scattered over various parts of the country, and some of them absent from the State, and it took time to get the proofs requisite.

That upwards of seven years ago deponent presented his case to Judge A. M. Crane, a practicing lawyer of the city and county of San Francisco, and advised with him as to the course proper to be taken, and was by him instructed to procure the affidavits of witnesses cognizant of the facts. Soon after this, deponent, in consequence of the loss of his said property in the said wharf by the destruction thereof, and of other reverses, became so reduced in means and property, as to prevent him from traveling in search of witnesses, or pay for drawing or taking the necessary affidavits, for want of money to defray the necessary expenses, and it has been mainly by the kindness of his friends that he has been able to defray the necessary charges for drawing and taking the affidavits already produced.

Deponent says, that, as he is informed and believes, there were 400 and over soldiers quartered at San Diego, (New Town), in 1861 and 1862, for whose use the lumber and timbers of said wharf were taken and converted into fuel.

That no wood or timber could possibly be had at the time the same was so taken, other than from said wharf, for the reason that the nearest point where any trees were growing was as much as eight miles from San Diego, and the long and heavy rains had rendered the ground soft, so that an empty wagon could not be hauled along the road, but would mire down, and stall, and horses or mules would sink to their bellies; and often, in quicksand spots, would go under out of sight, and without the fuel from said wharf the soldiers and officers would have suffered for want of cooked food, and for want of fires to render them comfortable.

Deponent further says, that it would have been quite impossible by any legal process, or any force that the courts or civil authorities could command, to have prevented the taking and using of said wharf for fuel. That deponent was not there at the time the same was destroyed, but at and near San Francisco, over four hundred miles distant, and did not know of the destruction thereof until the same had been accomplished; but had deponent been at San Diego he could not have prevented the same (that not fifty men capable of bearing arms, aside from said military force, then resided within ten miles of said wharf), and could have formed no sufficient force to enforce the law against the soldiers there quartered, or to prevent them from procuring fuel from said wharf or destroying the same for that purpose.

WILLIAM H. DAVIS.

Subscribed and sworn to before me this 31st day of December, A. D. 1875.

HENRY S. TIBBEY,
Notary Public.

STATE OF CALIFORNIA,
City and County of San Francisco, ss:

William H. Davis, being duly sworn, says that he is a citizen of the United States, and of the State of California, of which State he has been a resident since the year 1838; that he has always been a loyal citizen of the United States, and has borne true allegiance to the government thereof.

That in the month of October or November of the year 1850, affiant caused to be commenced on block No. 20, Gray's survey of the new town of San Diego, in San Diego County, California, a wharf of the following dimensions and description, to wit: piles, of redwood, from fifteen to twenty-eight inches in diameter, and varying from thirty to seventy-five feet in length, substantially driven at a distance of six feet apart, thoroughly braced with plank and covered with imported spruce and yellow-pine plank from one foot to fifteen inches wide and three inches thick; said wharf was of the following dimensions, to wit: length 550 feet, width 50 feet with an L 140 feet extending from the termination of the 550 feet above stated, which L had a frontage of 225 feet on (4) four fathoms depth of water at extreme low tide, and from the shore end of the wharf extended 450 feet up ——— street to Commerce street, a heavy, substantial planking on piles for communication in high tide with the mainland. Said wharf was finished in the spring of 1851.

This wharf was built in the most substantial manner, and at this time the tops of many of the redwood piles, which suffer less than those of any other wood from worms or decay, are visible, in a good state of preservation where they were cut off in 1860, '61, '62, as hereinafter set forth.

Affiant further says that near the shore end of the wharf he caused to be erected a good and substantial warehouse, built with heavy eastern timbers and imported plank of spruce and pine, two stories high, and 32 by 50 feet, which warehouse was situated in block (32) thirty-two, lot L of said survey of the new town of San Diego, contiguous to said wharf, and used in connection therewith for the purpose of storing in part such goods as were landed at the wharf.

Said wharf and warehouse having cost affiant the sum of sixty thousand dollars in United States gold coin, and being in a good state of preservation and repair, and worth that sum when taken from affiant and appropriated as hereinafter set forth, and would now be worth that sum if standing, for purposes of traffic.

Affiant further says that he was the lawful owner of the property above described, and the land upon which the same was situated, and was in undisputed possession of the same when the said property was appropriated to the use of the United States troops as hereinafter set forth, to wit:

In the winter of 1861, '62, affiant states on information and belief, that United States troops in the service of the government, consisting of regulars and volunteers under command of Major Haller, Captain Thomas Roberts, and Captain William French, and other officers to affiant unknown, by authority and command of said officers, being, at the time set forth, short of fuel, on account of heavy and long-continued rains, rendering roads utterly impassable, tore down and appropriated to their use for fuel and other purposes the said warehouse and wharf, and totally ruined, carried away, and destroyed said property, against the repeated protests of George B. Pendleton, then agent for affiant, and that they utterly refused to desist from such appropriation of affiant's property above described, and also utterly refused and neglected to make any compensation or remuneration for said property, and that neither affiant nor any other person has ever received any compensation for the same.

Affiant further states that the State of California during the period above referred to, was a loyal State, in full and true allegiance to the Union of the States and the general government.

Affiant further states, that from the time of the completion of said wharf in the spring of 1851, until the destruction of the same as above set forth, he received, through his agents, wharfage from all vessels discharging or receiving cargo and passengers at San Diego, to the net amount of \$150 per month, exclusive of cost of collection and repairs, his being the only wharf for the accommodation of the port. That after the destruction of said wharf, vessels were obliged to discharge and receive cargo and passengers by means of lighters, until the large increase of traffic and immigration, beginning in the year 1868, led to the building of another wharf about (250) two hundred and fifty yards from the site of said wharf belonging to affiant; that said new wharf would not have been built had that of affiant not been destroyed as above set forth. That the receipts from said wharf during the years from 1861 to 1868 would have been amply sufficient to have kept the same in excellent condition for traffic, and would have left over to affiant a monthly income of \$150 coin, or \$10,800 in excess of all repairs necessary to have kept said wharf as good as new for business purposes; and that from the winter of 1868 until the present time, owing to the large increase of traffic at the said port of San Diego, said wharf would have brought affiant a monthly income of at least \$600, coin, or an aggregate of \$50,400, coin, exclusive of cost of collection and repairs, the new wharf having brought to its owners a gross monthly

income of \$1,100, or \$92,400 during that period. On account of which facts, above set forth, deponent affirms, that by the destruction of his property as before described, he sustained damage to the full amount of (\$121,200) one hundred and twenty-one thousand and two hundred dollars, coin.

Wherefore affiant respectfully prays for such action by your honorable body as will permit him to establish his claim before the proper tribunal for the adjudication of such cases.

WILLIAM H. DAVIS.

Subscribed and sworn to before me this first day of December, A. D. 1874.

PALMER G. WOOD, [SEAL.]
Notary Public.

AFFIDAVIT OF WILLIAM SHERMAN.

UNITED STATES OF AMERICA,

State of California, City and County of San Francisco, ss :

I, William Sherman, a citizen of the United States and resident of the State of California, being duly sworn, do depose and say: That for many years last past I have been personally acquainted with William H. Davis, a citizen of the United States. That from the year A. D. 1861 until the year A. D. 1865, and up to the year A. D. 1868, the said William H. Davis resided in San Leandro, county of Alameda, State of California, since which time he has resided in the city of Oakland, county of Alameda, State aforesaid. That prior to and during the period above stated, the said Davis was and now is a true and lawful citizen of the United States. That during the civil war, namely, from the year 1861 to the year 1865, the said Davis was a true and loyal supporter of all of the acts of the Government of the United States in suppressing the rebellion; his general reputation where he resided and was known, being that of a loyal citizen, uncompromisingly opposed to all acts of the Southern Confederacy (so called), and which said reputation I have never heard questioned by any person.

WM. SHERMAN.

Subscribed and sworn to before me this 6th day of October, A. D. 1875.

HENRY S. TIBBEY, [SEAL.]
Notary Public.

AFFIDAVIT OF J. J. WARNER.

STATE OF CALIFORNIA,

City and County of San Francisco, ss :

J. J. Warner being duly sworn, says that he came to California in 1831, and from 1833 to 1844 was a resident of Los Angeles, California, and that he now and for twenty years past has resided in the county of Los Angeles in the State of California, and previous to that, from the year 1844 to 1857, resided in the county of San Diego in said State. That his age is sixty-nine years, and he is a native citizen of the United States, and now resides at the city of Los Angeles, and is a notary public and register in bankruptcy.

That he knew the wharf built and constructed by William H. Davis at San Diego, California, and knows it was a fine structure and a well-built wharf, and owing to the then high price of labor and lumber, it must have cost a large sum of money; and deponent heard and was informed in 1861 and 1862 that the same had been and was partially, or mostly, destroyed by the United States troops then stationed at San Diego, in order to supply them with fuel.

Deponent knows that the winter of 1861 and 1862 was a very wet one, the rivers and streams in San Diego County, and Southern California were overflowed, and the adjacent country rendered impassable, and the procuring of fuel from the adjacent country rendered impossible.

Deponent further says, that he has known and been acquainted with William H. Davis since the year 1838, and knows him as a law-abiding and loyal citizen during all that time.

J. J. WARNER.

Subscribed and sworn to before me this 30th day of July, A. D. 1877.

J. H. BLOOD, [SEAL.]
Notary Public.

AFFIDAVIT OF CHARLES THORN.

STATE OF CALIFORNIA,

City and County of San Francisco, ss :

Charles Thorn, being duly sworn, says that he is a native-born citizen of the United States, and is a resident of said city and county of San Francisco. That he is, and has been, for twenty-seven years past, by occupation, a master mariner, and his age is now sixty years. That he has commanded different steamships running on the

Pacific coast since the year 1854, and is now the commander of the steamship California, running on the route between Oregon and Alaska, and which steamship is at this time in the harbor of San Francisco for repairs. That I know the wharf constructed by William H. Davis at San Diego, California.

I was at San Diego, first in 1852, on the steamship Genl. Warren, from Panama for San Francisco (of which ship I was not then the commander), and we laid up alongside of said wharf. It was a fine structure and well-built wharf, extending into the bay about seven hundred (700) feet, and must have cost a large sum of money. In the early spring of 1862, deponent was at San Diego with, and in command of, the steamship Orizaba, with freight and passengers, and he then remarked to the merchants and others at San Diego, that there was a very fine wharf there when he was there last, but that it had mainly disappeared, and he was then told by them, that it had been demolished and torn up by the United States soldiers stationed there in the winter of 1861, 1862, for firewood or fuel. And deponent landed his passengers and freight in the surf-boats belonging to the steamship.

Deponent further states that the winter of 1861, 1862, was a very extraordinary wet winter, and that the entire southern counties of California were flooded.

Deponent is decidedly of the opinion, that said William H. Davis has a meritorious and valid claim against the Government of the United States for the destruction of said wharf, for which he ought to be paid.

Deponent further states, that he has known the said William H. Davis since the year 1850, and to the best of his knowledge and belief, he has always been a worthy and loyal citizen.

CHAS. THORN.

Subscribed and sworn to before me this second day of October, A. D. 1877.

Witness my hand and official seal.

E. V. JOICE, [SEAL.]
Notary Public.

AFFIDAVIT OF JOSÉ M. ESTUDILLO.

STATE OF CALIFORNIA,

County of San Diego, ss :

José M. Estudillo, being duly sworn, says, that he is a citizen of the United States, and a resident of the city and county of San Diego, State of California, and has been such resident for more than forty years.

That he was familiar with the wharf and warehouse built at New San Diego by William H. Davis in the year 1851; that said wharf and warehouse were well constructed and substantial and remained in good condition until the year 1861. That during said year, 1861, and the early part of 1862, the said wharf and warehouse was almost entirely destroyed by the troops stationed at New San Diego Barracks, they having removed the planking and timbers of said wharf, and the lumber of said warehouse, and used the same as fuel for the command; that he has seen the soldiers there stationed removing the lumber from the wharf and warehouse, and piling the same at the barracks, and cut the same for firewood for the supply of the post.

Deponent further says, that he remembers the winter of 1861; that a very unusual amount of rain fell, and that travel upon the roads of the county was rendered almost impossible, and wholly so for loaded teams during the months of November and December, 1861, and January, 1862.

Deponent further says that he was well acquainted with George A. Pendleton, while living; that said Pendleton was the brother-in-law of affiant, and was in consequence on terms of intimacy. That he knew that said Pendleton was the agent of said William H. Davis at San Diego, and that, as such agent, had strongly protested to the officers in command at said New San Diego Barracks against the destruction of the said wharf and warehouse; that said Pendleton frequently told affiant that he had begged them to desist from tearing down and burning the lumber from said structures, but that his protests were of no avail with the officers, they only answering, that they must have fuel for the post, and could get no other, owing to the condition of the roads; that said Pendleton told affiant, that he had tried his utmost to prevent the destruction of said wharf, but was unable to do so.

Affiant further says, that the destruction of said property as aforesaid was notorious, and much talked of and regretted by the community.

JOSÉ M. ESTUDILLO.

Subscribed and sworn to before me this 10th day of October, A. D., 1877.

A. S. GRANT, [SEAL.]
County Clerk.

AFFIDAVIT OF A. S. GRANT.

STATE OF CALIFORNIA,
County of San Diego, ss :

A. S. Grant, being duly sworn, deposes and says: That in the year 1864 he was a captain in the 4th Regiment Infantry, California Volunteers, and stationed at New San Diego Barracks, in said county, and in command of said post.

That he was acquainted with and on terms of intimacy at that time with George A. Pendleton, then a resident of the city of San Diego, in said county and State; that during the year 1864 the said Pendleton told affiant that he, as agent of William H. Davis, esq., of San Francisco, had done everything in his power to prevent the destruction of the wharf of the said Davis at New San Diego by the troops of the United States in the winter of 1861 and 1862; that, though the officers regretted the necessity of resorting to the said wharf for fuel, the severity of the season compelled them to do so.

Affiant further says, that the said G. A. Pendleton died in the month of March, A. D. 1871.

A. S. GRANT.

Subscribed and sworn to before me this October 12th, 1877.

C. P. NOELL, [SEAL.]
Notary Public.

AFFIDAVIT OF THOMAS H. BUSH.

UNITED STATES OF AMERICA,
State of California, County of San Diego, ss :

Thomas H. Bush, being duly sworn, deposes and says: That he is a citizen of the United States; now resides in the city of San Diego, and has so resided since the year 1866.

That he is the present county judge of the county of San Diego, and has filled that position for the past six years.

Deponent further says that he is well acquainted with William Evans, Louis Rose, James W. Conners, and Marcus Schiller, and Jos. S. Manassee, residents of the city and county of San Diego, said State; that they are truthful men, and their veracity cannot be questioned, and that any statements they may make, under oath or otherwise, are entitled to full credit.

THOMAS H. BUSH.

Subscribed and sworn to before me this 28th day of September, A. D. 1874.

A. G. GRANT, [SEAL.]
County Clerk, San Diego County, California.

AFFIDAVIT OF WILLIAM EVANS.

UNITED STATES OF AMERICA,
State of California, County of San Diego, ss :

William Evans, being duly sworn, deposes and says: That he is a citizen of the United States, aged fifty-six years; resides in the city of San Diego, county and State aforesaid, and has resided there continuously since the year 1847.

Deponent was acquainted with the wharf at New San Diego, in said city, the same which was built by William H. Davis in 1850 and 1851, and at which, for a long time, steamers and other vessels landed passengers and goods.

Deponent knows the fact, that by the summer of 1862 not more than about fifty feet, at the shore end of the wharf, remained; that the timbers and planking of the rest had been carried away.

Deponent further says the winter of 1861 and 1862 was a very wet season; that deponent was then, and for several years next before had been, following the business of teaming in said city; that during said winter on the usually travelled roads the wheels of wagons would sink to the hubs, which made it almost impossible to haul firewood from the hills and valleys outside of said city.

Deponent knows that during that season a large portion of said wharf was consumed for fuel by the U. S. troops then stationed at said post; that the same was done publicly, and was notorious in said community at that time; that during said winter deponent was often at the post, and has seen the lumber of said wharf lying around the barracks ready-split up for firewood.

W. EVANS.

Subscribed and sworn to before me, at my office in the city and county of San Diego, this 23d day of September, A. D. 1874.

A. S. GRANT, [SEAL.]
County Clerk, and ex-officio Clerk of County Court of San Diego County, California.

AFFIDAVIT OF LOUIS ROSE.

UNITED STATES OF AMERICA,

State of California, County of San Diego, ss.

Louis Rose, being first duly sworn deposes and says, that he is a citizen of the United States, of the age of sixty-six years, resides in the city of San Diego, county aforesaid, and has resided there continuously since May 30th, 1850.

Deponent further says that he is personally acquainted with Mr. Wm. H. Davis, was so acquainted with him in the year 1850 and 1851, and knows that he built a wharf in said city, at the place known as New San Diego, with a warehouse for the storage of goods, at the shore end of said wharf, which wharf was completed early in the year 1851, in good order for the landing of freight and passengers and U. S. Government stores from steamers and other vessels; that said wharf was a substantial structure, on piles, extending with an L over six hundred feet into the bay of San Diego, to a sufficient depth of water for steamers to lay alongside, and was used for such purposes for several years, this then being the only wharf in said city.

Deponent further says, that he was acquainted with Major Haller, U. S. A., and with Captain Thomas Roberts, California volunteers, officers in command for a time at the U. S. military post in said New San Diego, in the winter of 1861 and 1862, and also with Captain William F. French, California volunteers, who succeeded Captain Roberts at said post; that after the arrival of Captain Roberts there, two companies of U. S. troops came there from Fort Yuma; that for some length of time during said winter, four companies were stationed there.

Deponent further says, that during said period (and in all about three years), deponent had the contract to furnish beef for said post, and in the course of business visited said post frequently, often three times during the same day. Deponent has very often seen squads of from six to eight of the troops of said post, with axes, go to said wharf and cut away portions of the planks and piles thereof and haul the same, for fuel, to their barracks at New San Diego. Deponent has often seen this done when Major Haller was in command, as well as after Captain Roberts took command. Deponent further says, that the same was done habitually, from day to day, and the said destruction by them of said wharf was notorious in said community.

Deponent further says, that toward the summer of the year 1862 only a small portion of said wharf, near the shore end, remained uninjured.

Deponent further says, that he has seen portions of the lumber of said wharf at said barracks, split up for firewood.

Deponent further says, that said winter of 1861 and 1862 was very rainy; the river San Diego was flooded for a considerable length of time, and wagons could not move about to bring wood for the post from the country outside, or for any purpose; that for a long time it was impossible to get firewood from the usual places of supply.

Deponent further says, that in the years 1850 and 1851, he was well acquainted with the prices of lumber at the city of San Diego and as shipped from San Francisco or elsewhere on the Northern Pacific coast; that during said period and repeatedly since, he has bought lumber for building purposes at said city of San Diego; and from said knowledge deponent believes the cost of said wharf could not have been less than sixty thousand dollars.

Deponent further says, that from the year 1851 till 1862, and since, the principal landing for government stores, as well as for the merchants and people generally of Old Town and the interior of said county, was at said New San Diego, and the loss of said wharf was long felt as a public inconvenience and injury, and until the building there of private wharves since the year 1868.

LOUIS ROSE.

Subscribed and sworn to before me at my office in the city and county of San Diego this 23d day of September, A. D., 1874.

A. S. GRANT, [SEAL.]

County Clerk and ex-officio Clerk of the County Court of San Diego County, California.

AFFIDAVIT OF JOSEPH S. MANNASSE.

UNITED STATES OF AMERICA,

State of California, County of San Diego, ss:

Joseph S. Mannasse, being duly sworn, deposes and says that he is a citizen of the United States, is a resident of the city of San Diego, and has been such resident since the year 1853; that he is a merchant doing business in said city and has been so engaged for the last twenty-one years.

Deponent further says that he was well acquainted with Bvt. Major Haller, U. S. A., during the time he was stationed at New San Diego Barracks, said county, also with Captain Thomas Roberts, California Volunteers, who succeeded Major Haller in

command, and with Capt. William French, California Volunteers, who relieved Capt. Thomas Roberts of command at said post.

Deponent further says that while Major G. O. Haller, with his company, was so stationed at New San Diego Barracks, and about the first day of December, 1861, Capt. Thomas Roberts, with Co. "E.," 1st Cal. Vol. Inf., arrived; and that soon after, two companies U. S. Inf. arrived at said post from Fort Yuma, and that from about that time until the latter part of December, 1861, when the three companies of Regulars sailed by steamer for the East, the command at said post was supplied with fuel from the wharf, then standing near said barracks, built and owned by William H. Davis.

And that after the sailing of the three companies of U. S. Infantry, and while Captain Roberts was in command, and until some time after the arrival of Captain William French, about the last of January, 1862, the said wharf was also resorted to for fuel for the post.

That a very unusual amount of rain fell during that season; that the traveled roads were very wet and soft, so much so, that teaming outside of said city, for a long time, was necessarily suspended.

That wood for the post was procured from the main roads, and about twenty miles distant from the city, and that, owing to the unusual rains and soft condition of the roads, it was impossible to get wood during that season.

Deponent further says that during the year 1861 and 1862, he had a contract to supply said post with grain, said contract having been made with Lieut. F. H. Bates, U. S. A., acting quartermaster at said post in 1861, and that by way of business, and being on terms of intimacy with all the officers, he almost daily visited the post; that he has frequently seen squads of men of the command at work tearing off the planking of said wharf; has seen them load up carts with the lumber so taken; has seen them haul it to the barracks yard; has seen them split up the lumber, and has seen them burn the same in the kitchen and bake-house of the post; and that during said winter, while visiting said Major Haller at his quarters, he has seen the lumber of said wharf burning in the said quarters of the said Major Haller.

Deponent further says that the destroying and burning of said wharf was done *openly and publicly*, and became a matter of common talk in the community at that time; so publicly was it done that I inferred at the time and have always since supposed it was done by the orders of the post commanders, and to so great an extent was it done that it is impossible that it could be otherwise.

Deponent further says that he well remembers the wharf before named; that it was a fine structure, built of the best material and in a very substantial manner, and, in my opinion, if it had not been destroyed, would have stood till the present time, with occasional repairs; and that had the same been in existence for the last seven or eight years, must necessarily have yielded very great profit to the owner, and have been of very considerable value at any time during those years.

J. S. MANNASSE.

Subscribed and sworn to before me this 28th day of September, A. D. 1874.

A. S. GRANT, [SEAL.]

County Clerk, and ex-officio Clerk of County Court of San Diego County, California.

AFFIDAVIT OF MARCUS SCHILLER.

UNITED STATES OF AMERICA,
State of California, County of San Diego, ss:

Marcus Schiller, being duly sworn, deposes and says that he is a citizen of the United States, resides in the city of San Diego, said county, and has resided there continuously since the year 1855, and that he is now, and has been since his arrival in said year, a merchant doing business in said city.

That he knew the wharf built at New San Diego by William H. Davis when it was standing; that it was a very substantially constructed one, extending into the bay of San Diego to a sufficient depth of water to accommodate ships of the largest class.

Deponent further says that in the year 1862 but a small portion of said wharf remained. That for several years before the year 1862 it was known to him, and he was also frequently told, that the lumber from the wharf aforesaid was not only being burned, but otherwise used by the U. S. troops stationed at New San Diego Barracks.

That during the months of the last of 1861 and the first of 1862, the fact that the said wharf was being taken down and burned as fuel for the command, was of very great notoriety in this community; was very frequently spoken of among the citizens, and was almost universally known by them.

Deponent further says that he has seen the lumber from the wharf piled up within the yard of the barracks, split up and burned as fuel by the troops; that he has spoken of the matter with the soldiers, and has heard them boast of its making good fires, and particularly for baking purposes. That it was done in so open and public a manner, that it must have been known and sanctioned by those in command.

Deponent further says that he remembers well the unusual severity of the weather during the latter part of 1861 and early part of 1862; that so wet and soft were the roads out of the city that teaming was, for a number of months, almost entirely suspended.

MARCUS SCHILLER.

Sworn to and subscribed before me this 29th day of September, A. D. 1874.

A. S. GRANT, [SEAL.]

County Clerk and ex-officio Clerk of County Court, San Diego County, California.

AFFIDAVIT OF JAMES W. CONNERS.

UNITED STATES OF AMERICA,

State of California, County of San Diego, ss :

James W. Connors, being duly sworn, deposes and says that he is a citizen of the United States, resides in the city of San Diego, county aforesaid, and has resided there continuously since the year 1850.

That in the year 1861, Bvt. Maj. Haller, U. S. A., was in command of the military post at New San Diego, said county and State; that about the 1st of December, 1861, Capt. Thomas Roberts, of Company E, First California Volunteer Infantry, arrived at said post; that very soon thereafter two companies of United States Infantry arrived at the post from Arizona or Fort Yuma, en route by sea to the East.

That after the arrival of the said two companies from Fort Yuma, the three companies of the United States Infantry remained three or four weeks at the post awaiting transportation, when they embarked by steamers for the East, leaving Capt. Thos. Roberts in command of the post.

Deponent further says that in the latter part of January, 1862, Capt. William French, of Company D, Fifth California Volunteer Infantry, with his company, arrived at said post; that owing to the impassable condition of the roads, Captain Roberts, with his company, remained at the post until February, 1862, about three weeks after the arrival of Company D, Fifth California Infantry.

Deponent further says that during the winter months of 1861 and 1862 an unusual quantity of rain fell at this place, rendering the roads of this section of country almost impassable, and wholly so for loaded wagons.

That soon after the arrival of the two companies from Fort Yuma, the fuel at the post being exhausted, the lumber from the wharf, built and owned by William H. Davis, then standing near the barracks, was used by the said four companies as fuel for the companies' kitchens and bake-house, as well as for officers' quarters.

That it was a daily occurrence for squads of men of the command to go with axes and cross-cut saws to the wharf, and tear off the planking, and saw the timbers of the wharf, load wagons with, and draw the lumber to the quarters, and split the same and burn it in the companies' kitchens and bake-house of the post.

That after the three companies of United States Infantry had left the post, Capt. Thomas Roberts supplied his command with fuel wholly by lumber taken from the wharf until some time after the arrival of Capt. Wm. French with Company D, Fifth California Infantry.

Deponent further says that the lumber taken from the wharf was not alone used as fuel for the post, but was used for all purposes for which lumber was required.

Pens were built of it for keeping swine; platforms, benches, water-tanks, and water-troughs were made from it; it was also used as curbing for wells sunk in different places about the post, and very frequently burned at the blacksmith-shop at the post, in setting tires of wagons of the Quartermaster's Department.

Deponent further says that during the years before named he, with his family, resided at New San Diego, and distant about one hundred and fifty yards from the barracks; that he was very frequently in and about the barracks, and among the troops; that the destruction and burning of said wharf was within his knowledge, and was also notorious in the community at the time. That he has spoken with Captain Roberts several times concerning the matter, and that he (Roberts), admitting the fact, stated to him that "he must have fuel, and could not get it elsewhere."

Deponent further says that in the spring of 1862 but very little of the wharf above referred to remained—I do not think it would exceed fifty feet at the shore end.

JAMES W. CONNERS.

Subscribed and sworn to before me in my office in city and county of San Diego, this 23d day of September, A. D. 1874.

A. S. GRANT, [SEAL.]

*County Clerk and ex-officio Clerk of the County Court of
San Diego County, California.*

AFFIDAVIT OF HARRIET CONNERS.

UNITED STATES OF AMERICA,
State of California, County of San Diego, ss :

Harriet Connors, being duly sworn, deposes and says that she is the wife of James W. Connors, who has made affidavit in the matter of the burning and otherwise destroying the wharf owned and built by Wm. H. Davis at New San Diego Barracks in said county; that she resided with her said husband for several years at New San Diego, including the years 1861 and 1862.

Deponent further says that she has read the affidavit of her husband, and knows the contents of the same, and that the matters therein stated are true of her own knowledge, except the use made of the lumber of said wharf other than the burning of the same, which was not known to her except by common report.

HARRIET CONNERS.

Subscribed and sworn to before me this 13th day of October, A. D. 1874.

A. S. GRANT, [SEAL.]
County Clerk, San Diego County, Cal.

AFFIDAVIT OF E. W. MORSE.

STATE OF CALIFORNIA,
County of San Diego, ss :

E. W. Morse, being duly sworn, says that he is a citizen of the United States; that he resides in the city of San Diego, said county and State, and has been a resident of said city since the year 1850, and a merchant in said city in 1861 and 1862.

That he was familiar with the wharf built at New San Diego, California, and was residing here when said wharf was built; that it was a fine, capacious, and strongly-built structure, built of redwood piles and eastern plank; that its cost as he was then informed by the constructing contractor, and now verily believes, was fully sixty thousand dollars.

Deponent further says that he remembers well the months of November and December, 1861, and January, 1862; that an unusual amount of rain fell during said months; that the roads of the country became very soft, and that travel over the same became impossible for heavy wagons or for loads of any kinds; that during said months the destruction of said wharf by the troops stationed at New San Diego, for fuel for the command, was known, and much talked of, and in fact was notorious in the community; that the existence of the wharf was a great convenience and benefit to the people of San Diego, and its destruction seriously felt and regretted, and was indeed a public calamity.

E. W. MORSE.

Subscribed and sworn to before me, this 12th day of October, A. D., 1877.

A. S. GRANT, [SEAL.]
County Clerk.

AFFIDAVIT OF D. B. HOFFMAN.

UNITED STATES OF AMERICA,
State of California, County of Los Angeles, ss :

D. B. Hoffman, first being duly sworn, deposes and says: That he is a native-born citizen of the United States, formerly a citizen of the city and county of San Diego; resided in said city and county in 1861 and 1862, and was a member of the assembly of the State of California from said county in the above mentioned years of 1861 and 1862; is at present a resident of the city and county of Los Angeles; is a practising physician in said county and city, and has resided here since 1875; in the year 1868 was elected one of the Presidential electors of the State of California.

In the month of October or November, A. D., 1861, Captain Thomas Roberts with his company, Company E, First California Volunteer Infantry, arrived at New San Diego and relieved Major Haller, at that time commander of the post of San Diego. The surgeon of the post having gone East with Major Haller, Captain Roberts employed deponent as acting assistant surgeon of the U. S. Army to visit the post daily. From the time of the arrival of Captain Roberts and his command, at San Diego, the rains were so heavy that it was impossible to haul wood for the use of the troops; and there being no other way of supplying wood for the daily requirements of the troops, the soldiers used the planks and timbers of the wharf owned by W. H. Davis.

The said planks and timbers were consumed for hospital fires, and for cooking purposes, by the soldiers in their barracks. Deponent has seen the soldiers tearing up the wood of which the wharf was constructed, and bringing the same to their quarters

and using it in the hospital and around the post, for cooking, making fires, and other purposes, from day to day. This wood was used in deponent's office in the United States hospital for the post.

In the latter part of the month of December in the year 1861 deponent left San Diego for Sacramento to attend the session of the legislature, as one of its members.

The condition of the roads in the country and in and around San Diego was such that no wood could be brought in for use in the barracks.

Deponent has known the wharf of W. H. Davis since 1851; deponent was then attached to the P. M. S. S. Panama, as surgeon; he went to reside at San Diego in 1854, and continuously resided until 1875.

W. H. Davis' wharf was a very substantial structure, built of redwood piles and eastern pine, and extended into the bay about seven hundred (700) feet. Said wharf must have cost a large sum of money.

The average rain fall of San Diego is about nine (9) inches; the winter of 1861 and 1862 had a rain-fall of thirty (30) inches; that winter was, therefore, unusually wet.

D. B. HOFFMAN.

Subscribed and sworn to before me this 8th day of October, 1877.

J. J. WARNER, [SEAL.]
Notary Public.

AFFIDAVIT OF JOSHUA SLOANE.

STATE OF CALIFORNIA,
County of San Diego, ss:

Joshua Sloane, being duly sworn, says he is a citizen of the United States; that he is a resident of the city of San Diego, county and state aforesaid, and has been such resident since the year 1855.

That he was familiar with the wharf and warehouse formerly located at New San Diego, and known as Davis' wharf and warehouse; said wharf was a capacious and strongly built structure, and remained in good condition until it was demolished in the year 1861 by the United States troops stationed at New San Diego Barracks.

Deponent further says that he was appointed collector of the port of San Diego by President A. Lincoln, in the year 1861, and continued as such officer until the said office was abolished about the month of July, 1862; that as collector he frequently visited the post; and that during the months of November and December, 1861, and January, 1862, he almost daily officially visited the post, and during those months he frequently saw squads of soldiers tearing down the said wharf, and the lumber of said wharf piled upon the beach and at the barracks.

Deponent says that he considered the acts of the troops an outrage; that the destroying the said wharf made a deep impression upon his mind; that at the time he was the owner of property in the said city of San Diego, and he then considered the wharf of very great benefit to his property, and its destruction as affecting its value greatly, and that it seemed to him a public calamity.

Deponent further says that the winter of 1861 was an unusually wet one, causing the whole country about here to be flooded, and was in fact the greatest flood I ever saw, causing the roads to be very soft and miry, to such an extent as to cause the suspension of travel with heavy or loaded wagons.

Deponent further says, that he was well acquainted and upon intimate terms with the commanding officers at New San Diego Barracks during the years 1861 and 1862; that Maj. Haller was in command prior to December 1, 1861; that Captain Thomas Roberts succeeded Major Haller about the 1st of December, 1861; and that Capt. William French succeeded Captain Roberts in command about the 1st of February, 1862, and that the tearing down of the wharf before mentioned in this affidavit, was done by the troops of the command of the said officers.

JOSHUA SLOANE.

Subscribed and sworn to before me this 10th day of October, A. D., 1877.

A. G. GRANT, [SEAL.]
County Clerk.

AFFIDAVIT OF JAMES MCCOY.

UNITED STATES OF AMERICA,
State of California, County of San Diego, ss: *

James McCoy, being duly sworn, says that he is a citizen of the United States; that he resides now and has continuously resided in the city of San Diego, county aforesaid, since the year 1850; that from the year 1861 up to the year 1871 he was sheriff of said county, and is now member of the senate of this State, from San Diego County.

Deponent further says that the winter months of 1861 and '62 at this place were unusually severe, a great amount of rain falling, rendering the usually traveled roads almost impassable for loaded wagons; that during said months it was a subject of very

common talk, and, in fact, notorious in this community, that the troops stationed at New San Diego, said county, were consuming the wharf at that place, owned by William H. Davis, for fuel for the command.

JAMES MCCOY.

Subscribed and sworn to before me this 23d day of September, A. D., 1874.

A. S. GRANT, [SEAL.]
County Clerk, and ex-officio Clerk of the County Court
of San Diego County, California.

AFFIDAVIT OF J. C. BOGERT.

STATE OF CALIFORNIA,

City and County of San Francisco, ss:

J. C. Bogert, being duly sworn, deposes and says: That his age is fifty-six years; that he is a native-born citizen of the United States, and is by profession and occupation a master mariner, and is now in charge of the steamship William Taber, now lying in San Antonio Creek, or Estuary, opposite the city of San Francisco, and has been master or captain of said steamship for two years last past and upwards.

This deponent says, that from the year 1853 to 1863 he was the agent for the Pacific Mail Steamship Company at San Diego, in said State of California, and during that time he resided at what is known as Playa, at the entrance of the bay or harbor of San Diego, and that during that time he knew, and had frequent occasion to observe, the wharf of William H. Davis, commonly known as "Davis' wharf," at San Diego. That the said wharf was a well-built structure, and in the fall of the year 1861 the said wharf was in good condition, and steamships and sailing vessels landed at it. That in his capacity as agent for said company it became necessary for him, in the transaction of his business connected with the said agency of said company, to go to and visit the old town of San Diego about four times a week during the time of his said agency. Deponent says that it was very common talk among the people of Old San Diego of the disgraceful manner in which the said wharf was being destroyed and burnt up for fuel by the troops of the United States then stationed at New San Diego, in the fall of 1861 and winter of 1862. That he often then heard business men complain of the destruction of said wharf, because it made it more costly and expensive in the landing of their goods. The winter of 1861-1862 was a very wet one, making travel and transportation very difficult, and at times nearly impossible; deponent often mired down on horseback, during that time, in passing from his residence at Playa to Old San Diego, a distance of four and one-half miles; and the San Diego River was only passable in a boat; whereas before that time no difficulty had occurred in fording it. It was impossible to get wood for fuel from the adjacent country, and no loaded wagons could move about during that winter of 1861 and 1862.

J. C. BOGERT.

Subscribed and sworn to before me this 15th day of October, A. D., 1875.

PALMER G. WOOD, [SEAL.]
Notary Public.

AFFIDAVIT OF A. M. CRANE.

STATE OF CALIFORNIA,

City and County of San Francisco, ss:

A. M. Crane, being duly sworn, says that he is an attorney and counsellor-at-law, and has had his office in said city and county of San Francisco for ten years last past, and that his residence is in the adjacent county of Alameda; that he came to California in September, 1852, and very soon thereafter became acquainted with William H. Davis, and has ever since been well and intimately acquainted with him and his affairs, and in former years has been largely engaged and employed, professionally, in litigation wherein said Davis was a party, or interested, both for and against him; that he has very often heard him converse in respect to the large investment which he had made in the construction of the wharf at San Diego, "New Town," as it was called up to within ten years; and it was notorious among all who knew about his affairs that he had extended his credit and in every way used his best exertion to complete said wharf; and soon after its destruction by the military forces of the United States, deponent often heard him speak of the great loss and damage which he had sustained thereby.

Deponent further says that since the destruction of the said wharf, and within the last seven or eight years, a flourishing town of 3,000 inhabitants or upwards has grown up on the bay of San Diego, at said "New Town," and the adjacent country has been settled, and the port of San Diego has become one of considerable importance, having a weekly line of steamers (sometimes only tri-monthly), besides special steamers, and being also an occasional port of call for the Panama steamers; in addi-

tion to which, sailing vessels in considerable numbers visit the port, for the delivery of lumber and merchandise and the export of grain, hides, wool, honey, and other productions of the country, and the construction of other and new wharves has become necessary for the accommodation of the commerce, and deponent knows that said wharf built by said Davis, had it not been destroyed, would have been a source of considerable profit and revenue to him.

Deponent further says that within the past seven years he has frequently conversed with Mr. Davis on the subject of obtaining compensation for the destruction of said wharf; that about seven years ago at his law office in said city deponent talked the matter over fully with him, and the best advice he could then give was to gather the proofs of his claim, and present the matter to Congress for relief. That some two years after this, said Davis was engaged in a litigation which affected very important interests and occupied his attention; and deponent knows that, from time to time since, said Davis has been using his efforts to obtain the testimony of witnesses in said matter.

A. M. CRANE.

Subscribed and sworn to on this 11th day of January, 1876, before me.

E. H. THARP, [SEAL.]
Notary Public.

AFFIDAVIT OF W. C. FERRELL.

STATE OF CALIFORNIA,

County of San Diego, September 24, 1874, ss :

W. C. Ferrell, being duly sworn, deposes and says that early in the spring of the year 1850, and while the laws of Mexico were still in force, William H. Davis, Miguel de Peororena, José A. Aguirre, A. B. Gray, T. D. Johns, and W. C. Ferrell purchased from the Alcalde of the town of San Diego, a piece of the public lands on the bay for a town site, the said piece of land now forming a part of what is known as New San Diego. Soon after the purchase, the land purchased was divided between the purchasers. Sometime during the year 1850, William H. Davis commenced the construction of a wharf on one of his blocks, number twenty (20) of the plat of the town, as surveyed by A. B. Gray and T. D. Johns; said wharf was extended into the bay some seven hundred feet, and to a depth of about twenty-four feet of water at low tide; said wharf was fifty feet wide and had an L at the end two hundred and twenty-five feet in length, and was very substantially built of redwood piles and eastern pine plank of three-inch thickness.

The above facts are well known to me; for during the year 1851 I was, and up to the latter part of the year 1853 was, the collector of customs at the port of San Diego, under the appointment of President Fillmore, and saw the construction of the wharf as the work progressed. After the wharf was finished it was used by the shipping entering the port of San Diego, and had sufficient capacity and depth of water for the largest ships.

In the year 1860 I removed from San Diego and settled elsewhere; and upon my first return to San Diego, in 1864, W. H. Davis' wharf was gone.

I understood, from the common report at the time of the completion of said wharf, that it cost the sum of sixty thousand dollars, and from the substantial materials of which it was constructed, and from the high price of lumber and the high price of labor at the time the wharf was built, that it could not have cost less.

W. C. FERRELL.

Sworn and subscribed to before me this 24th day of September, A. D. 1874.

A. S. GRANT, [SEAL.]

County Clerk and ex-officio Clerk of the County Court of San Diego County, California.

By JOSÉ N. ALTAMINO, Deputy.

AFFIDAVIT OF C. P. NOELL.

UNITED STATES OF AMERICA,

State of California, County of San Diego, ss :

C. P. Noell, being duly sworn, deposes and says that he is a citizen of the United States, 62 years of age, and is a resident of the city of San Diego, said county; that he arrived in said city February, 1850, and resided there continuously up to 1854, and was engaged in merchandising during the time.

Deponent further says that Wm. H. Davis constructed a wharf and warehouse at New San Diego, said county, which were completed in 1851; said wharf was very substantially built of redwood piles and eastern plank of three-inch thickness, and extended into deep water of the bay of San Diego, a distance of about seven hundred feet, with an L along the line of deep water; that the largest class of steamships and sailing vessels came along side of and discharged their cargoes upon said wharf; that all the military stores required for the use of the government at said place, as well as

all goods and merchandise for the city of San Diego and the country surrounding, were landed at said wharf.

Deponent further says, that at the time of the completion of said wharf, and ever after, it was the common report and general understanding that said wharf cost sixty thousand dollars, and in my judgment I think it could not have cost less than that sum.

CHAS. P. NOELL.

Subscribed and sworn to before me this 28th day of September, A. D. 1874.

A. S. GRANT, [SEAL.]

County Clerk and ex-officio Clerk of the County Court of San Diego County, California.

AFFIDAVIT OF A. S. GRANT.

UNITED STATES OF AMERICA,

State of California, County of San Diego, ss.

A. S. Grant, being duly sworn, says that he is a citizen of the United States, resides in the city of San Diego, said county, and is at present clerk and auditor of said county.

That in the year 1861 he entered the service of the United States as captain of Company G, Fourth Infantry, California Volunteers, and that on or about the 20th day of November, 1862, with his company, he arrived at New San Diego Barracks, in said county, relieving Capt. Wm. French, Fifth California Infantry, of the command; that he remained in command of said post for nearly three years.

Deponent further says that when he arrived at said post there was a small portion of a wharf standing near said barracks, which, deponent was informed, was built and owned by Wm. H. Davis; that he was also informed by very many persons residing in said city that, during the winter of 1861 and 1862, a great part of the original wharf had been burned by the troops stationed at said post, as fuel for the command.

A. S. GRANT.

Subscribed and sworn to before me, at chambers, in the city and county of San Diego, this 29th day of September, A. D. 1874.

THOMAS H. BUSH, [SEAL.]

County Judge, San Diego County, California.

AFFIDAVIT OF ROBERT HALEY.

STATE OF CALIFORNIA,

City and County of San Francisco, ss:

Robert Haley, being first duly sworn, says that he is of the age of 55 years, a citizen of the United States, and a resident of said city and county; that he is by profession and occupation a master mariner; that he knows that certain wharf built by Wm. H. Davis at the city of San Diego, in the county of San Diego, State aforesaid; that said wharf was finished and completed by said Davis early in the year 1851; that the same was constructed of redwood piles and eastern pine plank of three-inch thickness; that it was well piled, braced, capped, and planked, and was very substantially constructed, and must have cost not less than \$60,000, and affiant has frequently heard it estimated to have cost at least said sum; that immediately after its completion the American ship Montauk, loaded with government stores, discharged her cargo at said wharf, and was the first ship that discharged cargo thereat; that affiant commanded several steamships during the 9 years commencing with the year 1851 and ending with the year 1860, with which steamships he frequently, and always when at San Diego, touched at said Davis' wharf, and landed and discharged cargo, and loaded and received passengers thereat; that affiant has seen laying at the said wharf at one time, two steamships, one sailing ship, one barque, the quartermaster's brig Patterson, and the cutter Frolic; that affiant was at San Diego in September, 1860, in command of the steamship Santa Cruz, and then again in the fall of 1861, as a passenger, and upon both these occasions the said wharf was in a good condition for the transaction of business, and for ships to discharge and take in cargo thereat.

ROBERT HALEY.

Subscribed and sworn to before me this 2d day of November, A. D. 1874.

E. H. THARP,

Notary Public.

AFFIDAVIT OF S. S. CULVERWELL.

STATE OF CALIFORNIA,

City and County of San Francisco, ss:

S. S. Culverwell, being duly sworn, says that he is a citizen of the United States; that he resided in the city of San Diego, said county and State, from the fall of 1867 to the fall of 1874.

Deponent further says that about the 1st day of July, 1868, he established himself in a general forwarding and commission business in New San Diego; that during said year he became the agent of the line of steamships between that city and San Francisco; that, in acting in that capacity, he was familiar with the amounts of freight received from vessels at that port.

That during the year 1869 he constructed a wharf at New San Diego, said county, for the purpose of facilitating his business; that he was induced to build the same owing to the large amount of freight delivered at that place for said county and Arizona.

Deponent further says that he knows the exact locality of the wharf built by W. H. Davis, and that the wharf built by deponent was about 250 yards distant from the locality of said wharf of Davis; that prior to the building of his said wharf, deeming the locality of Davis' wharf the very best one for such a structure anywhere on the bay of San Diego, affiant endeavored to purchase the same from said Davis, in which negotiation he failed.

That after the completion of his said wharf in 1869, and up to 1872, the receipts of said wharf averaged fully the sum of \$1,100 per month, and that prior to the completion of said wharf, and in the years 1868 and 1869, during which years deponent was agent for all freights received at said place, the amount of freight received fully equalled the amounts received after its completion.

Deponent further says that had the wharf of said Davis been standing in said years he certainly would not have risked the expenditure of the money he did in constructing his said wharf.

S. S. CULVERWELL.

Subscribed and sworn to before me this thirteenth day of October, A. D. 1874.

[SEAL.]

PALMER G. WOOD,

Notary Public.

AFFIDAVIT OF A. S. GRANT.

UNITED STATES OF AMERICA,

State of California, County of San Diego, ss:

A. S. Grant, being duly sworn, says that he is a resident of the city and county of San Diego, said State, and has so resided almost continuously since the year 1862.

That about the 1st of July, 1868, he entered into the employ of S. S. Culverwell, engaged in the forwarding and commission business at New San Diego, said county, and remained in said employ until about the 1st day of May, 1870, and that during said time had the immediate charge of all the freights received at this place.

Deponent further says that during the year 1869 the said Culverwell built a wharf at said city of San Diego, which was completed during the fall of 1869, and that thereafter and up to the month of May, 1870, he had the management of the said wharf as well as the freighting business of said Culverwell.

That in the month of May, 1870, deponent, with his partners, rented the said wharf of the said Culverwell, and continued the business for their own benefit, for which they paid the monthly rental of \$450.00. That in the month of May, 1871, deponent, with his partners, again rented the said wharf at a monthly rental of \$650.00, and continued in the business until March, 1872, and that he is familiar with the amount of freights landed at, and the receipts of, the said wharf from the year 1869 to May 1872.

Deponent further says that the receipts of said wharf during the years last named fully averaged the sum of \$1,100.00 per month; and that from 1868 up to the completion of said wharf in 1869 the freights received at this place fully equalled the amounts received after its completion.

A. S. GRANT.

Sworn to and subscribed before me this 31st day of October, A. D. 1874.

THOMAS H. BUSH,

County Judge.

[Report No. 54, 45th Congress, 3d session.]

WILLIAM H. DAVIS.

JANUARY 7, 1879.—Recommitted to the Committee on War-Claims and ordered to be printed.

Mr. JOHN W. CALDWELL, from the Committee on War-Claims, submitted the following report [To accompany bill H. R. 5763]:

The Committee on War-Claims, to which was referred the bill (H. R. 1734) for the relief of W. H. Davis, have considered the same, and bring in the following as their report:

This case presents the following state of facts:

In 1852, the petitioner, who was then a wealthy citizen of Southern California

erected on his property in New San Diego, in that State, a certain wharf and warehouse, of which the following is a description:

The wharf was 550 feet in length and 50 feet in width, running out to a depth of four fathoms of water, together with an "L" at its water-end, being 225 feet in length and 140 feet in width; the whole constructed of redwood piles of from 30 to 75 feet in length and from 15 to 24 in diameter, substantially driven into the soil at distances of six feet, covered or overlaid with imported spruce and yellow-pine plank of from 12 to 15 feet wide by three inches thick, with another "L" addition at the shore-end, 450 feet in length and similarly constructed.

The warehouse was 50 feet in length, 32 feet in width, and two stories high, and constructed of heavy Eastern timbers and imported spruce and pine planks.

This wharf and warehouse were at that time, and continued to be for many years, and until the time of their destruction, the only structure of the kind in San Diego; and all the steamers and sailing vessels stopping at that port unloaded and loaded thereat.

The cost of the construction of this wharf and warehouse was \$60,000. The property was kept in good condition down to the breaking out of the war.

In the winter of 1861-'62, San Diego was occupied by United States troops. In the early part of the winter and until about the 1st of January, 1862, the post was occupied by several companies of United States Infantry, Regulars, under command of Major Hallet, United States Army.

During the month of January, 1862, the post was commanded by Capt. Thomas Roberts, with Company E, First California Volunteer Infantry.

During the month of February he was relieved by Capt. William French, with Company I, Fifth California Volunteer Cavalry.

It further appears that during these winter months occurred the heaviest rainfall ever experienced on that coast. One witness testifies that the average rainfall is *nine* inches, and that winter it was *thirty* inches. The result of these floods of rain was that the stream became so swollen as to be entirely impassable, and the roads so miry and heavy as to be utterly impracticable for loaded wagons. Communication with the interior ceased, and, as a result of this, the troops at San Diego soon found themselves destitute of wood for fuel, or for any of the other purposes for which it is so necessary.

The property of Mr. Davis had been left in charge of his agent, George A. Pendleton, Davis being at that time absent from San Diego.

The wharf and warehouse lay conveniently near the post where the United States troops were encamped. It was a mine of fuel, at that time, perhaps, the most desirable commodity in San Diego; no other was obtainable within a distance of twenty miles. The condition of the country absolutely forbade even an attempt to procure it from the interior wooded country.

Under these circumstances, and driven by the necessity of providing themselves with the wherewithal to warm themselves and cook their food, the troops, by and with the advice and consent of their commanding officers, commenced to strip the wharf and warehouse of its valuable timbers. Daily a squad, provided with axes and crosscut-saws, went to the wharf. The planks were ripped up and the piles were sawed off to the water's edge, and the lumber thus obtained carted to camp. It was there used for "pig-pens, platforms, benches, water-tanks, and water-troughs." Wells were curbed with it, and it was used in the blacksmiths' shops; but the principal use to which it was put was as fuel. In this way it was used in the company's kitchen and bake-house and in the quarters of the officers.

This work of demolition and destruction went on until the entire structure was cleared away to the water's edge. During its progress the claimant's agent made frequent appeals to the officers in command, protesting against thus allowing it to go on. Their answer was that they regretted that the severity of the season compelled them to this course, but they must have the fuel, and saw no other way of obtaining it.

The loss of his property at San Diego reduced the claimant to extreme poverty. He was not able after the war to build again, nor until the last three or four years has he been able to raise sufficient funds to enable him to collect the proofs of his claim.

In 1868 another wharf and warehouse were built by another party, in the immediate vicinity of the claimant's property. These earned for their owner, during four years, until 1872, a gross income of \$1,100 per month. The owner, in an affidavit filed with this claim, says he would not have risked his money in the enterprise had Davis's property been standing.

The testimony in support of this claim consists of twenty-nine affidavits of citizens and residents of California, most of whom, as well as the petitioner himself, are personally known to many, if not all, of the Representatives and Senators from that State. The testimony of all of these witnesses show substantially the state of facts above set out.

Upon this case the claimant asks \$60,000.

The testimony as to the loyalty of the claimant places that fact beyond dispute.

Your committee is of the opinion that upon this case the claimant is entitled to relief. There is no more clearly-settled principle of public law than that where the property of a private citizen is taken for the public use, government should make compensation. Applying this principle to the cases furnished by the last war, the government has adopted the rule that the property must be that of a loyal citizen, and in some cases it must be situated in a non-insurrectionary State or district.

The claim of Mr. Davis presents the case of property belonging to a loyal citizen, situated in a loyal State, many hundred miles from the theater of war, appropriated for the use of the United States troops.

The liability of the government is beyond doubt.

The question remaining is, what shall the government pay?

Your committee is of the opinion that the claimant should have as compensation, whatever the wharf and warehouse were reasonably worth at the date of the appropriation. But what that amount is, the committee find some difficulty in determining. The proof is that it cost \$60,000 to put up the structures in 1852; that they were kept in good repair and were in use up to the date of their destruction; that they had earned, for many years, a fair income for their owner; the latter swears that they were in 1862, and would be now, reasonably worth the sum of \$60,000. Other proof as to their value is wanting, and your committee is of opinion that even if affidavits of experts were presented, it would not be entirely fair to the government to have this point left entirely to *ex parte* testimony. They have thought better to let the damages be assessed by a sworn officer of the government; and as the facilities at the command of the Secretary of War for determining this point are better and can be applied more readily than perhaps those of any of the officers of the government, they report in favor of leaving this task to him.

Your committee recommend the passage of the accompanying bill.

[S. Report No. 207. 46th Congress, 2d session.]

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 4, 1880.—Ordered to be printed.

Mr. HEREFORD, from the Committee on Claims, submitted the following report, to accompany bill S. 1208:

The Committee on Claims, to whom were referred the petition and papers in the case of William H. Davis, of California, have considered the same and bring in the following as their report:

This case presents the following state of facts:

In 1852, the petitioner, who was then a wealthy citizen of Southern California, erected on his property in New San Diego, in that State, a certain wharf and warehouse, of which the following is a description:

The wharf was 550 feet in length and 50 feet in width, running out to a depth of four fathoms of water, together with an "L" at its water-end, being 225 feet in length and 140 feet in width; the whole constructed of red-wood piles of from 30 to 75 feet in length and from 15 to 28 inches in diameter, substantially driven into the soil at distances of 6 feet, covered or overlaid with imported spruce and yellow-pine plank of from 12 to 15 inches wide by 3 inches thick, with another "L" addition at the shore-end, 450 feet in length and similarly constructed.

The warehouse was 50 feet in length, 32 feet in width, and two stories high, and constructed of heavy Eastern timbers and imported spruce and pine planks.

This wharf and warehouse were at that time, and continued to be for many years, and until the time of their destruction, the only structures of the kind in San Diego; and all the steamers and sailing-vessels stopping at that port unloaded and loaded thereat.

The cost of the construction of this wharf and warehouse was \$60,000. The property was kept in good condition down to the breaking out of the war.

In the winter of 1861-'62 San Diego was occupied by United States troops. In the early part of the winter and until about the 1st of January, 1862, the post was occupied by several companies of United States Infantry, regulars, under command of Major Hallet, United States Army.

During the month of January, 1862, the post was commanded by Capt. Thomas Roberts, with Company E, First California Volunteer Infantry.

During the month of February he was relieved by Capt. William French, with Company I, Fifth California Volunteer Cavalry.

It further appears that during these winter months occurred the heaviest rainfall ever experienced on that coast. One witness testifies that the average rainfall is *six* inches, and that winter it was *thirty* inches. The result of these floods of rain was that the streams became so swollen as to be entirely impassable, and the roads so miry

and heavy as to be utterly impracticable for loaded wagons. Communication with the interior ceased, and, as a result of this, the troops at San Diego soon found themselves destitute of wood for fuel, or for any of the other purposes for which it is so necessary.

The property of Mr. Davis had been left in charge of his agent, George A. Pendleton, Davis being at that time absent from San Diego.

The wharf and warehouse lay conveniently near the post where the United States troops were encamped. It was a mine of fuel, at that time perhaps the most desirable commodity in San Diego; no other was obtainable within a distance of twenty miles. The condition of the country absolutely forbade even an attempt to procure it from the interior wooded country.

Under these circumstances, and driven by the necessity of providing themselves with the wherewithal to warm themselves and cook their food, the troops, by and with the advice and consent of their commanding officers, commenced to strip the wharf and warehouse of its valuable timbers. Daily a squad, provided with axes and cross-cut-saws, went to the wharf. The planks were ripped up and the piles were sawed off to the water's edge, and the lumber thus obtained carted to camp. It was there used for "pig-pens, platforms, benches, water-tanks, and water-troughs." Wells were curbed with it, and it was used in the blacksmiths' shops; but the principal use to which it was put was as fuel. In this way it was consumed in the company's kitchen and bake-house and in the quarters of the officers.

This work of demolition and destruction went on until the entire structure was cleared away to the water's edge. During its progress the claimant's agent made frequent appeals to the officers in command, protesting against their allowing it to go on. Their answer was that they regretted that the severity of the season compelled them to this course, but they must have fuel, and saw no other way of obtaining it.

In 1868 another wharf and warehouse were built by another party, in the immediate vicinity of the claimant's property. These earned for their owner, during four years, until 1872, a gross income of \$1,100 per month. The owner, in an affidavit filed with this claim, says he would not have risked his money in the enterprise had Davis's property been standing.

The testimony in support of this claim consists of a large number of affidavits of citizens and residents of California, most of whom, as well as the petitioner himself, are personally known to the Representatives and Senators from that State. The testimony of all these witnesses shows substantially the state of facts above set out.

The long time that has elapsed since the claim accrued is explained by the petitioner that he was rendered absolutely penniless by the loss of this property, and was unable to get together the proofs of his claim until in 1872, when he first presented it to Congress, where it has been upon the files of the committees of either House without action until last Congress, when it was reported favorably by the Claims Committee of the Senate and the War-Claims Committee of the House. It failed to be reached on the calendar of private business, however, and so has been re-referred in this Congress.

The committee are convinced from the testimony presented in this case that the property was taken for the use of the United States troops, and that it was of great service to the soldiers and officers stationed at San Diego; that the condition of the country at the time and the scarcity of timber or other fuel furnished a sufficient excuse for the appropriation of this property, and that the claimant is entitled to equitable relief.

The committee are of the opinion that a fair compensation would be what the property was reasonably worth at the time of its appropriation by the United States. It does not clearly appear what such reasonable value is from the testimony filed in the case; nor does your committee believe it would be quite safe to leave such a matter to be settled by *ex parte* affidavits. They have thought it better to have the subject investigated by an officer of the government, who can do the work with the least trouble and expense. As the Secretary of War can easily detail some officer on duty in the vicinity of San Diego to make the proper inquiries, your committee have thought proper to refer the matter to him.

They therefore recommend the passage of the accompanying bill.

[PRIVATE—No. 103.]

AN ACT for the relief of William H. Davis.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of War be, and he is hereby, authorized and directed to cause to be investigated by the Quartermaster's Department of the United States Army the alleged taking by the United States authorities, for the use of the United States troops, during the years eighteen hundred and sixty-one and eighteen hundred and sixty-two, of a certain wharf and warehouse property, formerly situated

in San Diego, California, alleged to have been the property of William H. Davis, of Oakland, California, and to have been used by troops of the United States for fuel; such investigation to extend to the title of the property and the incumbrances thereon, the status of the owner, whether loyal or not, the value of the property destroyed, the circumstances of the destruction, and by whose direction, authority, or permission it was destroyed, and the reasons for the neglect to give notice to the War Department at or soon after the destruction occurred; and when such investigation shall be completed the Secretary of War shall report the result thereof, with his recommendation thereon, to Congress for action in the premises.

Approved March 3, 1881.

Proceedings of a commission of investigation in the case of WILLIAM H. DAVIS vs. THE UNITED STATES, under act of Congress [Private, No. 106] approved March 3, 1881, held by Lieutenant-Colonel RUFUS SAXTON, deputy quartermaster-general, United States Army, commissioner.

SAN FRANCISCO, CAL., May 2, 1881.

The commission met at 11 o'clock a. m.

P. W. RANDLE, being duly sworn, deposed as follows:

I am a native-born citizen of the United States, and am seventy-four years of age; am a resident of the city and county of San Francisco, State of California.

During the years 1861 and 1862 I was assistant surgeon in the United States Army, and as such was assigned to duty at the government barracks at the town of New San Diego, Cal., in December, 1861, under Capt. Thomas Roberts, then in command of the military post located there—succeeding Dr. D. B. Hoffman as surgeon of the post. I remained there as such surgeon until June, 1862.

During the months of December, 1861, and January and February, 1862, the wharf of William H. Davis, situate at New San Diego, known as "Davis's wharf," was appropriated by the command for fuel and other purposes. It was used in and about the hospital and barracks at the post for cooking, warming, and other necessary purposes, from day to day, during said time. I saw the soldiers tearing it down and removing the lumber therefrom to the hospital and barracks from day to day during said time.

The winter of 1861 and 1862 was so wet, from the numerous heavy rains which fell there during that season, that the roads leading to and from the post were impassable for teams, and it was impossible to obtain wood for fuel and other purposes for the use of the post from the surrounding country. The taking and appropriating of William H. Davis's wharf by the command stationed there during that time was a military necessity—there were no supplies of wood on hand. The contractor for such supplies was unable and did fail to furnish the same, and there was no other resource for wood for fuel and other necessary purposes at the post than "Davis's wharf." During said time Captain Roberts was relieved, as commander of the post, by Captain William F. French, under whom I continued to serve as surgeon of the post until my departure from San Diego, about June, 1862.

The command, under both officers, took and used the lumber from Davis's wharf for fuel and other necessary purposes, during said time; and, under Captain French, as late as the month of March, 1862.

I spoke to Captain Roberts, while he was in command, about the propriety of and authority for destroying and appropriating private property by his troops in that way (meaning and referring to "Davis's wharf," when he replied by asking: "What shall we do for fuel?" &c., and I was compelled to and did admit that it was a military necessity, and that the command could not do otherwise.

I had a similar conversation with Captain French, while he was in command; the substance of the conclusions arrived at were the same as with Captain Roberts—that it was a necessity, and unavoidable under the (then) existing circumstances.

At one time during said winter Captain French (I think it was) undertook to procure brush or shrubbery from an island in the Bay of San Diego, with which to supply fuel, &c., to the post, but on account of the inclemency of the weather, the inefficiency of the boat or scow used (the only means at his command) for transportation, and the almost valueless quality of the brush or shrubbery, when obtained, together with the great expense of procuring it, and the great risk or hazard attending it, he was soon compelled to and did abandon all further attempt or effort in that direction.

During said time, and while said destruction and appropriation were going on and being talked of at the post, I was also informed, and understood at the time, that the force of "regulars," under command of Major Haller, previously stationed at the post, and whom Captain Roberts and command relieved, also used a portion of the warehouse of William H. Davis, situated at the shore end of the wharf, for fuel, &c.

As early as March, 1862, only a very small portion of the wharf, nearest the shore

end, remained. During said time, I myself was under the necessity of and frequently did send my own orderlies and hospital attendants to the "Davis wharf" for lumber, for fuel, and other purposes, and they procured the same therefrom and removed it to the hospital and to my quarters, where it was used for cooking, warming, and other necessary purposes, in and about the said hospital and said quarters. I used probably more than other officers, as I had three fire-places in the hospital, besides fire-places in my quarters.

I went to San Diego in November, 1861. A part of the warehouse was left when I got there. Some of it had been destroyed. Major Haller's troops had taken part of it. The troops usually ripped up the planks and took a skiff and would go alongside the piles at the bay end of the wharf and saw off the piles with cross-cut saws. The piles were round. I saw no appearance of worms. There might have been some, but I saw no appearance of any. The wharf must have been seven or eight hundred feet long and from fifty to a hundred feet wide, I should think, and was constructed of heavy timbers. It was very large, and must have cost a large sum of money—probably from \$80,000 to \$100,000. I should not think a structure of that kind could be replaced for a less sum. There did not seem to be any one in charge of the wharf at that time.

The scow that Captain French built was not over from 20 to 30 feet long, and about 12 to 14 feet wide, I should think. The scow was probably built from the materials of the wharf, as I don't know where else it could come from.

S. S. CULVERWELL, being duly sworn, deposed as follows:

I am fifty-four years of age; am a citizen of the United States, and a resident of the State of California; am now living in the city and county of San Francisco, and by occupation am a contractor and builder. I have been engaged in said business on the Pacific coast and in this State since the year 1849.

I knew the wharf and warehouse of William H. Davis, at San Diego, Cal., when in existence. In 1853, soon after its construction, I saw and examined the same, and the materials of which it was constructed, and the manner in which it was constructed. The piles were all of redwood, of a large size, well driven into the ground, and about 6 feet apart. The structure was well framed together throughout, all being substantially mortised and tenoned, and the whole thoroughly and strongly built. In my judgment it must have cost from \$75,000 to \$80,000.

In 1869 I built and owned the wharf at San Diego, about 250 yards from the site of said "Davis wharf," known as the "Culverwell wharf," being the first wharf constructed there after the destruction of the said "Davis wharf." Said "Culverwell wharf" was 24 feet wide, running out into the bay to an ell, 84 by 154 feet. The whole structure was built of Oregon pine, with the exception of a few stray redwood piles from the old "Davis wharf." The piles of the "Culverwell wharf" were driven from 12 to 16 feet apart, and were braced together. The Davis piles were much larger and better, and more valuable than the pine piles, and cost at the time, in the market, fully twice as much. The "Culverwell wharf" cost \$30,000.

In 1875 I saw and examined the "Culverwell wharf," and found that the pine piles had been replaced, and some of them replaced again, by reason of unsoundness and decay, whilst the old redwood piles from the "Davis wharf" were still sound and serviceable.

Had the "Culverwell wharf" been built of the same kind of materials, and in the same substantial and workmanlike manner, it would have cost fully \$60,000.

I have been familiar with the price of timber and lumber, the cost of transportation, and the price of labor on this coast and in this State since the year 1849, and well knew the same in 1861-'62. Davis's wharf could not have been built for \$60,000 at that time, nor would I have taken a contract to build it for such a sum. Had it been standing and in good repair in 1869, when I built the Culverwell wharf, I would gladly have given \$60,000 for it.

I know the value of the "Davis wharf" in 1861-'62, and at the time of its destruction. It was then well worth the sum of \$60,000.

I have no interest, either directly or indirectly, in the result of the claim of said Davis against the government for the value thereof; nor am I in any manner related to him, or connected with him, in business or otherwise.

The following is a careful and accurate statement of the cost of my said "Culverwell wharf," in 1869, to wit:

600 pine piles, 45 feet long, 12 inches in diameter, at 30 cents per foot.....	\$8,100 00
65,000 feet of capping, 10 inches by 10 inches, at \$35 per M.....	2,275 00
85,000 feet of joists or beams, 2 inches by 10 inches, at \$35 per M.....	2,805 00
45,000 feet of top of wharf, 8 inches by 8 inches, at \$35 per M.....	1,575 00
130,000 feet 3-inch pine plank covering, at \$35 per M.....	4,550 00
60,000 feet of 2-inch plank, laid double, diagonally, on the ell part, at \$35 per M.....	2,100 00

Iron work, bolts, straps, &c.....	\$1,200 00
100 kegs spikes, at \$7 per keg.....	700 00
120 days' labor, at \$50 per day, including engine, pile-driving, planking, &c.....	6,000 00

Aggregating.....	29,305 00
Warehouse, 50 by 50 feet, one story, set on piles.....	1,500 00

Total, including freight on all..... 30,805 00

The following is a careful and accurate estimate made by me of the value of said "Davis wharf" and warehouse in 1861-'62, at the time of its said destruction, to wit:	
2,493 redwood piles, 50 feet long (average), 16 inches in diameter, at 40 cents per foot.....	\$49,860 00
179,940 feet capping, 12 inches by 12 inches, at \$35 per M.....	6,297 90
249,750 feet of 3-inch plank covering, at \$35 per M.....	8,741 25
20,000 feet bracing, 4 inches by 6 inches, at \$35 M.....	700 00
165 kegs spikes, at \$8 per keg.....	1,320 00
Iron bands, straps, &c.....	200 00
Labor, pile-driving, planking, &c.....	8,000 00

Aggregating.....	75,119 15
Warehouse, 50 by 32 feet, two stories.....	1,500 00

Total, including freight on piles and lumber, at \$10 per M..... 76,619 15

The statements made in my affidavit of October 13, 1874, are correct. (See pp. 34 and 35, printed petition.)

A. S. GRANT, being duly sworn, deposed as follows:

The statements made by me in my affidavits of October 12, 1877, and September 29, and October 31, 1874 (printed on pp. 15, 33, 35, and 36 of petition of W. H. Davis), are true and correct. To those affidavits I add the following: When I arrived at San Diego there was about 50 or 60 feet of the wharf left, at the shore end. The part left was perfectly sound. The covering of the wharf was 3-inch pine plank. The piles were apparently sound. Some of them were afterwards taken out and found to be sound.

WILLIAM F. SWASEY, being duly sworn, deposed as follows:

I am fifty-seven years of age. I reside in the city and county of San Francisco. I first came to California in 1845, and have resided in the State ever since. Early in 1846 I was consular secretary with Thomas O. Larkin, United States consul at Monterey. For a short time during 1846 I was a clerk for William H. Davis, then a merchant trader upon the coast. On the formation of Fremont's battalion in 1846, I joined that force as assistant commissary of subsistence, in which capacity I accompanied said force to Los Angeles. On their arrival at Santa Barbara, the battalion being utterly without quartermaster's or subsistence stores, except beef, Mr. William H. Davis, whose vessel, with cargo composed of general merchandise, was lying in the harbor, promptly came forward and voluntarily placed said cargo at Colonel Fremont's disposal, knowing that the only pay he would receive would be the written acknowledgment of Colonel Fremont that he had received said goods on account of the government. Upon these conditions the battalion received from Mr. Davis the clothing, camp and garrison equipage, and subsistence they were so greatly in need of.

During the year 1879 I had several conversations with Mr. B. T. Catlin in relation to Mr. Davis's claim against the government for destruction of property at San Diego during the late rebellion. In said conversations Mr. Catlin evinced great inimical feeling against Hon. H. F. Page, M. C., intimating that his sole and only motive for opposing the claim of Mr. Davis was his personal, vindictive feelings against Mr. Page, and for no other purpose. I said to him that I had known Mr. Davis for thirty-four years, and knew him to be a strictly honorable man, and that I believed his claim was just; and that I thought it was gratuitously unkind in Mr. Catlin to oppose the claim of Mr. Davis simply because of his personal enmity to Mr. Page. I further remarked that Mr. Davis would be at great expense in pressing his claim, and that after paying the legitimate fees and expenses of his lawyers and agents in Washington, he would receive but a moiety of his claim. Mr. Catlin replied; "Damn it, nobody ever comes to me with offers of fees or payment for services," leaving the impression upon my mind that if Mr. Catlin had been consulted in a friendly way, at the start, his opposition to the claim of Mr. Davis would never have commenced, and also that if he, Catlin, believed his further opposition might be withheld without compromising his honor, I feel fully convinced he might be induced to withhold it, if the matter should be earnestly and zealously urged upon him.

I have known Mr. Davis intimately since 1846, and know him to be an upright and honorable man. During the late rebellion no more zealous and loyal citizen resided in California.

The commission then adjourned to meet at a future date.

SAN FRANCISCO, CAL., May 7, 1881.

The commission met at 11 o'clock a. m.

CHARLES THORN, being duly sworn, deposed as follows:

The statements made in my affidavit of October 22, 1877 (pp. 12 and 13 of printed petition), are true. I knew Capt. Robert Haley and Capt. J. C. Bogert, who have heretofore testified in Mr. Davis's case, intimately. They are dead. They were both reputable citizens, and were very highly esteemed on this coast.

WILLIAM SHERMAN, being duly sworn, deposed as follows:

The statements made in my affidavit of October 6, 1875 (page 11 of printed petition), are true.

I think I first knew Mr. Davis in 1849. I have had constant business relations with him ever since, up to the last five or six years, and have been intimately associated with him. Mr. Davis applied to me for assistance in procuring testimony to establish his claim, about the year 1864 or 1865. He told me the wharf had been destroyed by the United States troops. He was at that time in considerable financial distress, and wanted me to help him, as he had no means with which to procure the necessary facts to lay before the government, in order to establish his claim for damages for the destruction of his property.

Mr. Davis and my brother were associated in business, and they came to this coast together, and through my brother I formed an intimate acquaintance with him.

I was cognizant of the fact of Mr. Davis having expended large sums of money in the construction of the wharf.

A. M. CRANE, being duly sworn, deposed as follows:

I am judge of the superior court of Alameda County, California; have been a resident of said county of Alameda, California, since September, 1852, except that, for about one year, I resided in San Francisco. From May, 1864, to December 31, 1879, I kept my office and practiced law in San Francisco, residing in the adjoining county of Alameda. Since January 5, 1880, I have been judge as aforesaid, residing now at Oakland, California.

The statements made in my affidavit of January 11, 1876 (printed on pp. 29 and 30 of petition), are true, but the words "sometimes only tri-monthly," between parentheses in the thirteenth line on page 30 should be stricken out.

H. W. CARPENTER, being duly sworn, deposed as follows:

I have resided in California, in the county of Alameda, and of San Francisco, for thirty years. Have known William H. Davis during the most of that time; in early times as a man of large wealth, and at all times as a reputable and loyal citizen.

Mr. Davis has frequently talked with me with regard to his alleged losses by the destruction of his wharf at San Diego, by the military forces of the United States. He consulted with me upon the subject a good many years ago. I cannot fix the time definitely, but probably about the years 1867-'68, and urgently solicited me to take charge of his claim for damages—for the destruction of his property—against the Government of the United States. I am an attorney-at-law. I was so occupied at that time with other business that I declined to take charge of the matter. Frequently, from that time on, Mr. Davis has applied for advice upon the subject, and for pecuniary assistance, stating to me that his circumstances were so reduced that it was impossible for him to obtain the funds necessary to prosecute his claim. I did not decline to take charge of his claim because I thought it not well founded. I was satisfied from his statements and other information that he was entitled to compensation.

FERDINAND VASSAULT, being duly sworn, testified as follows:

I have known William H. Davis since early in 1849. In early days he was a man of large means and a respected merchant of San Francisco. I have had business relations with him for many years, and always found him worthy of confidence and esteem in every respect. I have known that from 1863 or 1864 he has been in embarrassed circumstances. About the year 1865 he talked with me about the destruction of his wharf at New San Diego, by the United States troops, and afterwards, I think in 1873-'74, he applied to me for pecuniary assistance in order to enable him to get the facts establishing the destruction of his property before the proper authorities of the

United States; and I have rendered him assistance for that purpose on several occasions, and know that through that assistance he procured some of the testimony heretofore laid before Congress. I know that he was loyal to the United States during the war of the rebellion.

I know that redwood piles have stood in the Bay of San Francisco for twenty-two years. I built the "Pacific Wharf" in 1851-'52, and a large majority of the piles were standing in 1874, and many are standing there to-day, and are sound. The piles were not copped, and had no material upon them for preservation.

The commission then adjourned to meet at a future date.

SAN FRANCISCO, CAL., May 28, 1881.

The commission met at 11 o'clock a. m.

O. C. WHEELER, being duly sworn, deposes and says as follows:

I have been a resident of the State of California for thirty-two years, and am sixty-five years of age. Up to 1869 I was officiating as a clergyman, and since then have been a general agent of the Central Pacific Railroad Company. In June, 1850, Mr. William H. Davis was engaged in constructing a wharf and several warehouses at San Diego. In May, 1851, I was there again. I think the wharf was completed then. The buildings were also completed. I have no definite knowledge of the structures—that is, statistical knowledge—but they were large and capacious, and well built. I was told by Mr. Hooper, the agent of claimant, that the wharf, warehouse, and other improvements that claimant had made in San Diego, must have involved an expenditure of about two hundred and fifty thousand dollars. I lodged in one of the warehouses adjacent to the wharf for the space of a week. I was sent to San Diego in 1860. The warehouse was the property of Mr. Davis. It was a strong building, constructed of sound and strong timbers, and evidently built to endure. A traveling companion with me at the time remarked, as the wind was blowing very hard: "It must be very strong as it does not shake."

I have been acquainted with Mr. Davis since 1849; have known him well, and have never heard anything against his integrity or loyalty.

BERNARD PEYTON, being duly sworn, deposed as follows:

I was the agent for Mr. William H. Davis in 1851, and a long time previous thereto. Mr. Davis was at that time in the receipt of rents of about the sum of \$5,000 per month; these sums were all applied to the building of his property at San Diego. I presume so, for the money was all sent there. I know it was expended for his San Diego business generally, for the purchase of lumber and other building material. I don't know how much the wharf and warehouse cost, but I know there was a steady stream of about five or six thousand dollars per month went to San Diego for his building purposes. This was going on for about a year. I knew at that time of his building the wharf and warehouse, from the letters received from him sent from San Diego, and from conversations with him. Mr. Davis sold large and valuable improved property at that time, also, at the northwest corner of Montgomery and Clay streets. To the best of my knowledge all was expended in the San Diego building business. He also sold a valuable fifty-vara lot at the corner of California and Front streets, and my recollection is that this sum was also expended for liabilities incurred at San Diego, in carrying on his improvements there.

I am a manufacturer of gun-powder. The company is the California Powder Company, at Santa Cruz, Cal.

I paid many of the bills personally for the expenditures above set forth. I could give exact figures, but the books were burned in the fire of May, 1851.

JOHN P. SHELDON, being duly sworn, deposed as follows:

I am a native-born citizen of the United States; am a resident of the county of Alameda, State of California, and am about forty-seven years of age. By trade and occupation I am a contractor, pile-driver, and lumber dealer, in the city and county of San Francisco. I have been continuously engaged in said business in the State of California since the year 1852.

I have known S. S. Culverwell as a contractor and builder in said State for more than twenty years, and have long known his reputation for skill and ability in said business. I have carefully read a true copy of the affidavit of the said Culverwell, and know the contents thereof, and have also discussed the same with said Culverwell. I know the facts set forth in the said affidavit, as to the costs of lumber and material during the years 1861 and 1862 are correct and true, and that the said Davis' wharf, therein described, could not have cost less than the sum therein set forth.

In my long experience as a contractor for building wharves and for pile-driving on the Pacific coast, extending over a period of not less than twenty-eight years, I have had ample opportunity to carefully examine the effects of the marine insect or worm.

commonly called the "teredo," upon piles and other timbers that have been used in wharf-building, or other structure that may have been subject to the attacks of said insect. I have frequently drawn piles that have stood for twenty years and over in the sea water of the Pacific coast, and where said insect abounds, and have invariably found that the ravages committed upon redwood piles by the teredo have been slight in comparison to the damage they commit upon pine piles. In most cases redwood piles standing for the time and in the condition hereinbefore mentioned had been rarely ever touched by the insect, and were in condition and fit for redriving.

I am still engaged in wharf building upon the city front of San Francisco, and have never been engaged in any other business but lumber and contracting for the last twenty-nine years. I have built a large number of the wharves at the said city front.

A. J. BRYANT, being duly sworn, deposed as follows :

I am ex-mayor of the city of San Francisco, Cal. I am acquainted with John P. Sheldon. I have known him to be a contractor and lumber dealer for more than twenty years, and have long known his reputation for skill and ability in his said business. John P. Sheldon has constructed large and costly wharves upon the city front of the said city of San Francisco. •

A. E. HORTON, being duly sworn, deposed as follows :

I have resided in the State of California for fifteen years and upward, and have resided in the city of San Diego for eleven years, last past ; I built the addition called "the town of New San Diego," California, now the city of San Diego, and was at the construction thereof the owner of the largest portion of the same.

During the year 1869, I constructed at said place a wharf of the following dimensions, to wit : 2,200 feet in length, 8 feet in width, with a T at the water end 150 feet in length and 50 feet in width. I also constructed a warehouse, about 70 feet in length and 50 feet in width, at the shore end of the said wharf. My said wharf and warehouse cost me the sum of \$45,000. Said structures have been built for more than ten years, and are now in excellent repair.

My said wharf is not more than one-half the size of the Davis wharf, and is built of Oregon pine. I have frequently examined the site of the Davis wharf, and there are now standing some of the redwood piles of which the Davis wharf was built, still standing embedded in the sand of the beach.

I have long known Mr. S. S. Culverwell, who has testified in this matter. I have an intimate knowledge of his skill and ability as a builder and contractor, and have the utmost confidence in his integrity, as well as in his judgment upon all matters pertaining to his vocation. I have carefully read said Culverwell's testimony on behalf of the claim of Mr. William H. Davis for damages for the destruction of what was known as the Davis wharf and warehouse. From my personal knowledge of the prices of labor, lumber, material, and transportation for the same, necessary in the construction of said "Davis's wharf and warehouse," the said estimates made by said Culverwell in his said testimony are true and correct, in every particular. When said "Davis wharf and warehouse" were built, I believe they could not have cost less than the estimate made by said Culverwell, to wit, seventy-six thousand and six hundred and nineteen dollars and fifteen cents.

Since my residence in San Diego I have been often told by the citizens of said place of the destruction of said property by the United States military forces during the years 1861 and 1862. It is a matter of common notoriety at that place.

I know the claimant to be a man of excellent character and a loyal citizen of the United States. I have no business relation with Mr. Davis, and there are no ties of kindred between us. I have no interest, directly or indirectly, in his claim.

I have frequently conversed with persons who had a thorough knowledge of the "Davis wharf and warehouse," at the time of the destruction of the same by United States troops. If the said wharf and warehouse had been standing at the time I built my wharf, I would not have constructed the same. From my opinion of the character and ability of those who had a thorough knowledge of the condition and value of the "Davis wharf and warehouse," at the time of its destruction by the said troops, I would have given the sum of \$60,000 for said property, had the same been in existence at the time I constructed my wharf; for the said Davis property could not have been constructed at that time but for a sum far exceeding \$60,000.

I know that the redwood piles last about three times as long as the pine piles. I have some standing in my wharf at San Diego Bay, not far from the site of the Davis wharf. The distance is about three-quarters of a mile, and they have been standing for about twelve years.

GEORGE P. TIBBETTS, being duly sworn, deposed as follows :

I am a native-born citizen of the United States, am fifty-three years of age, and am a resident of the county of Santa Barbara, State of California. At present I am a

farmer by occupation. I have resided in Santa Barbara county since the year 1865, and for several years have been postmaster of the city of Santa Barbara. I resided in the county of San Diego during the years 1849 to 1865.

I well knew William H. Davis in 1850.

At the time the "Davis wharf and warehouse" were built at New San Diego, Cal., in 1850 and 1851, I lived in the city of San Diego, Cal. (Old Town). I was familiar with the wharf and warehouse built at New San Diego, Cal., by Wm. H. Davis, and was residing there when said wharf and warehouse were built. They were fine, capacious, and strongly-built structures; built of redwood piles and eastern plank. I was informed and verily believe their cost was fully \$60,000 and upwards.

About the 14th day of May, 1861, a wood contract to supply the post at New San Diego, Cal., for the coming year, was awarded to Philip Crosthwaite. I commenced delivering wood for Crosthwaite soon after said contract was awarded, and continued up to the 12th day of July, 1861, at which time the acting quartermaster informed me that the contract was not ratified by the commanding officer at San Francisco, and that they were ordered to furnish themselves with wood as best they could; from which time Crosthwaite and myself ceased delivering wood at the post.

During the months of October, November, and December, 1861, and January, February, and March, 1862, I was residing at San Luis Rey, San Diego County, about 42 miles from New San Diego. I was frequently informed, and it was commonly reported, that the troops of the United States, then stationed at New San Diego, were destroying "Davis's wharf and warehouse," and using the same for fuel; I believe such destruction was done by volunteer troops, after the departure of the regular troops.

The winters of 1861 and 1862 were exceedingly wet winters, and the heaviest I had seen since my residence in this State.

I was in San Diego either in October or November, 1861. I saw the property at that time. I walked upon the wharf. I don't recollect that the warehouse was there then, but I think it was. The wharf was in good repair and condition in October, 1861. It was a strong and finely-built structure. I should say it was well worth \$60,000 at that time—in October, 1861. All the freight by sea was landed at that time over the wharf.

The commission then adjourned to meet at a future date.

Proceedings of a commission of investigation in the case of WILLIAM H. DAVIS vs. THE UNITED STATES, under act of Congress [Private, No. 106] approved March 3, 1861, held by Lieutenant-Colonel RUFUS SAXTON, deputy quartermaster general, commissioner.

SAN DIEGO, CAL., June 7, 1861.

The commission met at 11 o'clock a. m.

MATTHEW SHERMAN, being duly sworn, deposed as follows:

I was in the army during the rebellion. I now reside at El Cajon, San Diego county, California. I was mustered out in 1865, as Regimental Quartermaster, Fourth Infantry. I arrived in San Diego November 30, 1862. Went on duty as quartermaster of the post. Was on duty as quartermaster from November 30, 1862, until February, 1864.

At the time of my arrival, my predecessor, Lieutenant Glasby, had partly finished a guard-house. That guard-house was built—floors, cells, and, I think, the outside walls—from planks of the wharf belonging to Mr. W. H. Davis. The troops were hauling water from Old Town when I arrived, and I shortly afterwards commenced digging a well about three-quarters of a mile east from the barracks; and in the absence of any other material (steamers only making monthly trips), I used some of the wharf material for curbing the well dug for the government. There was a post garden near this well, and the men took some of this wharf timber, split it up, and fenced the garden with it.

Capt. A. S. Grant was post commander while I was quartermaster.

My company relieved that commanded by Captain French. The wharf was in a dilapidated condition when I arrived. Some of the lumber was lying around the government buildings at that time, and only the shore end of the wharf was then standing. I did not see the soldiers take any of the lumber from the wharf.

When I arrived the piles were more or less affected by the teredo. I think redwood piles will last from five to seven years, but do not claim to be an expert on that point.

Do not think it possible to have a storm in this bay of sufficient severity to injure a wharf.

I was here when the wharf at the foot of Fifth street was built, in 1869. I do not know whether the piles of that wharf are in good condition.

I do not know of any warehouse being on Davis' wharf.

E. W. MORSE, being duly sworn, testified as follows:

I am now a resident of San Diego, and have been since 1859. My present occupation is a bank director.

The statements made in my affidavit dated October 12, 1877 (printed on pp. 24 and 25 of the petition of William H. Davis to Congress), are correct.

Since my residence here I have never known of a storm severe enough to wash away a wharf. I do not know that this wharf was so injured by teredo as to weaken it sufficiently to be swept away by a storm. I have had no experience with regard to the durability of piles—redwood ones. I have known of no storm here of sufficient severity to endanger even a common flat-bottomed skiff.

I saw some of the wharf timber lying at the wood-pile at the barracks, in the winter of 1861-'62.

LOUIS ROSE, being duly sworn, testified as follows:

I am seventy-four years of age. My residence is San Diego. I am postmaster at Old Town, San Diego, and am a dealer in lands.

My statements made in my affidavit dated September 23, 1874 (printed on pp. 17 and 18 of petition), are correct.

I do not know of any island in the vicinity from which wood could be procured for troops. I know of no storm injuring Mr. Davis' wharf during or prior to the winter of 1861-'62. I do not think it possible for a storm in this harbor to injure a wharf. I have had a wharf myself and it has never been injured by a storm.

I think redwood piles with the bark on would last 8 or 9 years. I do not know whether the bark was on the piles in Mr. Davis' wharf or not.

CHARLES P. NOELL, being duly sworn, testified as follows:

I am sixty-nine years of age. Am a resident of San Diego, Cal.

The statements made in my affidavit dated September 28, 1874 (printed on page 32 of petition), are correct.

Dr. D. B. HOFFMAN, Acting Assistant Surgeon United States Army, now post surgeon at San Diego Barracks, San Diego, Cal., being duly sworn, testified as follows:

The statements made in my affidavit of October 8, 1877 (printed on pp. 25 and 26 of petition), are correct, with the exception that before the word "the," on the sixteenth line on page 26, the words "and it was reported that" should be inserted.

I think possibly a southeast gale might injure a wharf here, but I have never heard of a storm here severe enough to do that. I don't think it possible for a wharf to be injured by any storms which ordinarily occur on this bay.

Davis' wharf was used constantly for landing passengers and freight before its destruction by troops. I judged it was then suitable for such purposes for the reason that I went on the wharf frequently when steamers arrived and departed.

JAMES W. CONNERS, being duly sworn testified as follows:

I am a teamster, and reside in San Diego.

The statements made in my affidavit dated September 23, 1874 (printed on pages 22 and 23 of petition), are correct.

I never knew of any fuel being obtained by troops from islands in this vicinity. I know of no boats being built by troops or used by them in transporting wood. I do not know of any storms injuring Davis' wharf or any other wharf.

At the time of the departure of the troops—which came from Arizona—in the winter of 1861-'62, the steamer which took them away being too large to come up close to the wharf, the troops marched to the end of the wharf, and their freight and baggage was hauled in wagons to the end of the wharf, and thence taken in boats to the steamer. At the time of the departure of these troops steamers and sailing vessels were discharging their cargoes at Davis' wharf.

I think the condition of the piles in the winter of 1861-'62 was generally good. Some of them were worm-eaten—worse towards the end of the wharf than near the shore. Before the destruction of the wharf repairs had been made to it by putting in bracing in some places.

There was no wood growing on any island in this vicinity except small chaparral brush.

At 12.30 p. m. the commission adjourned to meet again at 2.30 p. m.

JUNE 7, 1881, 2.30 p. m. The commission met pursuant to adjournment.

MARCUS SCHILLER, being duly sworn, testified as follows:

The statements made in my affidavit dated September 29, 1874 (printed on pages 20 and 21 of petition), are correct.

I think the condition of the wharf in the winter of 1861 was good, and that the piles were good. I drove on the wharf frequently, even up to shortly before its destruction by the troops. I do not remember that the wharf was ever injured by a storm. It could not have been injured to any great extent by a severe storm without my knowledge, as I was here constantly.

I think the piles were redwood, as I saw some of them split up. I think the plank-ing of the wharf was pine, as I saw, at several times, quite large piles of the wharf timber at the barracks, and saw it split up by the troops. I asked them what they did with it, and was answered that they used it for baking.

I know that wood has been obtained by private parties from islands in this vicinity, and brought over in boats. The wood was chemesal, scrub-oak, &c., and the size was so small it was not necessary to split it. Very few pieces were as large as my wrist. I do not know of any of the troops obtaining any such wood. I was frequently around the barracks, having business there with the government officers, and never saw any of that kind of wood there.

I never saw any broken piles in Davis' Wharf.

JOSEPH S. MANASSEK, being duly sworn, testified as follows:

My present business is general commission merchant and real-estate dealer.

The statements made in my affidavit dated September 28, 1874 (printed on pages 19 and 20 of petition), are correct, except that the word "unnecessarily," in the 36th line on page 19, should be "necessarily."

I do not know that the wood obtained by the troops from the wharf was the only fuel used by them, but I do know that they used timber from the wharf as fuel, as I have seen them haul it away, split, and burn it.

I am acquainted with the islands in the harbor. On Western Island, known as "the Peninsula," there was some brush, but no wood. The size was from 1 to 2 inches in diameter. That was the only island from which any considerable quantity of wood could have been procured by boat; I knew of Capt. J. C. Bogert getting some fuel from that island for the troops. I don't remember the year; I think it was in 1855 or 1859. I saw some of the wood carried into the barracks. It was before the destruction of the wharf. I know of no such fuel being procured for the troops in 1861-'62. I never saw any such wood in use in the barracks.

The troops generally used oak wood, but in the fall of 1861 and in the winter of 1861-'62, the fuel generally used by them was lumber from the wharf.

I have never known of any storm here injuring wharves or any permanent structures. I have been living for twelve years about 75 feet from mean high-tide, and have had full opportunity to know. I have seen the bay pretty rough. There were white caps, but there was no considerable swell.

I remember that there was a warehouse near the shore end of the wharf. I do not personally know when it was built. I do not know of any part of the warehouse having been used for fuel by the troops. I know of some of the wharf timber being used for building a guard-house, for curbing wells, and for fencing, during the time Lieut. A. S. Grant was in command. I remember that some of it was hauled to use as a fence for a company garden. Lieut. Matthew Sherman, quartermaster at the barracks, and Lieut. Haycock dug a deep well at what is called "Sherman's Addition," and used some of the wharf lumber for curbing that well. The garden fenced from the wharf lumber contained about an acre.

I saw the company of Col. E. B. Willaston using some of the wharf lumber for curbing another well—about 1864-'65 or 1866. Other wells were dug by the troops, and wharf lumber used by troops in curbing them.

Prior to 1861-'62, the wharf needed some little repairs to the center; this was done by bracing.

Teams were used on the wharf up to the time Major Haller left. I do not know of any destruction of the wharf by any parties before the troops commenced its destruction.

I think the condition of the piles in 1861-'62 was good; saw some of them taken out after that, and carried to Old Town, which, I think, were in good condition.

I knew of no complaints being made about teredo attacking piles in this harbor, until they attacked the pine piles of the Culverwell wharf in about 1875 or 1876.

I knew William Evans, teamster, who sometimes hauled from the wharf to Old Town. He was a man of good character and of veracity. He is now dead. I knew J. C. Bogert, now deceased. His reputation for veracity was A No. 1. I knew Robert Haley. Think I have heard he was dead. He was a sea captain, and a man of good repute for integrity.

At 4.25 p. m. the commission adjourned to meet again at 9 a. m., June 8, 1881.

JUNE 8, 1881, 9 o'clock a. m.—The commission met pursuant to adjournment.

HENRY MACLAGAN, being duly sworn, testified as follows:

My age is 53; business, saloon keeper; residence, San Diego. I have resided here of

and on since 1853. Was here once or twice a month with mail during the years 1861-'2; was in Arizona most of the time from 1858 to 1868 [witness here exhibited a certificate showing that he carried the mails between San Diego and Arizona City, from April, 1860, to July, 1860].

I was well acquainted with Davis' wharf. I think the piles were redwood. Have some of the planks (2-inch) in my house, given me by Mr. Geo. Pendleton, Mr. Davis' agent.

About the year 1857, before I went to Arizona, a severe storm injured the wharf, and a large quantity of the planking was carried around the bay. Did not look at the wharf particularly, and don't know how much of it was injured. Don't know the condition of the wharf in 1861. Don't know whether or not the wharf was repaired after the storm; never saw the soldiers taking away any part of the wharf.

There was a warehouse on the block next to the barracks—a two-story one—which I always thought belonged to Mr. George F. Hooper. The warehouse, I think, was still standing in 1862, pulled to pieces, somewhat, at that time. Did not take particular notice of its condition.

My house was built in 1853, and after that, when the floors needed repairing, Mr. Pendleton gave me enough of the wharf planks to floor one room.

Redwood piles will not last more than three or four years, nor will any other kind in this bay. Never examined the piles of Mr. Davis' wharf to examine whether they were worm-eaten or not.

E. A. WALL, being duly sworn, testified as follows:

My age is sixty-six; occupation, teamster; residence, San Diego. This has been my residence since 1844.

I think Davis' wharf was finished about 1851-'52.

I remember the arrival here of the California volunteers, and the departure of the troops which came here from Arizona. Do not remember the date. If I remember aright, the wharf was in a dilapidated condition when Captain Roberts' Company arrived here. I do not remember the condition of the wharf when the Arizona troops arrived here. [Witness here retired to procure some notes which would enable him to fix dates.]

O. S. WITHERBY, being duly sworn, testified as follows:

My age is sixty-six; residence, San Diego. I am president of a bank here. I have resided in this county continuously since 1849. From 1859 to 1868 I resided in the country, but was in town frequently a portion of the time.

I am acquainted with the property known as Davis' wharf. Do not remember exactly the condition of the wharf in the fall of 1861, as I paid no particular attention to it. Before 1861, the wharf was run into by the steamer Goliath, and a considerable portion of the wharf was knocked down by the steamer. I understood that the agent made the steamship company pay some five or six hundred dollars for the damage done. The wharf was in a dilapidated condition then.

There was a severe rain-storm about the year of the commencement of the war, the most severe I have ever known here. I do not know that it injured the wharf.

I have seen a portion of the wharf material used for fencing a company garden. Don't know anything about how much the troops burned.

I think redwood piles will last eight to ten years—that they would be destroyed by teredo in about that time. Think redwood would not last longer than any other kind. No wharves here have lasted longer than about that time.

Mr. Pendleton took up a large portion of the wharf (don't recollect the year) and gave Mr. Evans half of it for hauling it to Old Town. Don't recollect whether it was before or after the commencement of the war.

In the winter of 1861-'62, after the severe rain, I had occasion to go into the country on horseback, and myself and companion were obliged to leave our horses in the mud, on account of the bad condition of the roads.

I have had no business connection with the construction of wharves. Don't know what kind of piles were used in building wharves here. Did not examine the piles in Mr. Davis' wharf to see if they were eaten by teredo.

There were no graded roads, no roads except natural trails, running out from San Diego in 1861-'62. After severe rains teams mire in places on most of the roads in the country.

I was not in the habit of going on the wharf regularly in 1861-'62, as I lived in the country. I don't know that the wharf was down at that time, as I don't recollect the dates.

Up to 1858, I used to go to San Francisco about once or twice a year, and at those times I took my departure by steamer direct from the wharf. The steamers might have continued stopping at the wharf until 1861, but I don't recollect positively about it.

The lumber hauled by Evans for Pendleton made a large pile. I don't know whether or not it would build more than 50 feet of wharf.

The examination of B. A. WALL was resumed.

[Witness stated that he could not find anything from his notes which would enable him to establish dates.]

I hauled goods to and from the wharf during the time Captain Roberts, Captain Grant, and Captain French were in command. Hauled goods all the time Captain Ketchum was in command. The wharf was good then. I continued hauling until portions of the wharf gave way so that hauling could not be done. I don't know but I'm a little too fast in saying that it was all the time that Captain Ketchum was in command, for I am not sure that the wharf was all of that time in condition for hauling. Steamers several times knocked portions of the wharf down, and sometimes portions of the wharf gave way from the weight of goods piled upon it. I suppose the cause of the wharf giving way was that the piles were eaten by the teredo.

I remember a warehouse, occupied by Mr. Hooper as a store. It was taken down, I think, by Mr. Pendleton, and a portion of it, at least, hauled to Old Town. Don't know whether any one else took any of the warehouse. I think it was in good condition when it was taken down.

I don't know whether any of the troops took any of the wharf. Think they could not have taken any great portion of it without my knowledge.

I think that the best piles will last about seven years, and that the redwood piles will last the longest. No matter what the wood is, some piles will last longer than the others.

Part of the time when Captain Grant was here freight was landed on the wharf, and I hauled some of the freight to Old Town. Captain Grant was a volunteer officer, and stationed here after the commencement of the war.

During the past year I have been keeping a saloon, and have been part of the time in the country. I am not driving team now. During the last year I have been stopping some of the time in the country with my friends, voluntarily, taking care of chickens, cows, &c., at two or three different places, and during the two months preceding last month I have had charge of a ranch. I went in the country first, for my health. During the last month I have been attending in the fish market. The ranch I was attending is an 80 acre one, all under cultivation. The fish market is on the beach. I have deserted it now. Left it on account of rheumatism.

I was in the warehouse before it was torn down (perhaps a week or a month before), but did not carefully examine its condition. Think it was good.

The larger part of the wharf was hauled out of the water on to the beach, and Mr. Pendleton gave half of it away for salvage. I afterwards had occasion to buy some. Mr. Evans hauled away a good deal of it to Old Town for Mr. Pendleton.

I have known Mr. Davis for some years. Had a difficulty with him in 1849, about not refunding certain passage money to me when the ship in which I was coming here from San Francisco had to put into Monterey in a leaking condition. I could get no satisfaction from Mr. Davis.

Day before yesterday Mr. William Lyon told me that Mr. Davis would give me \$20 to keep my mouth shut in this case. I replied that Mr. Davis owed me \$50, and that when he paid me I would talk to him.

PHILIP CROSTHWAIT, being duly sworn, testified as follows:

My age is fifty-five; residence Lower California; business, stock-raiser. I resided in San Diego from 1845 to 1861, also from 1869 to 1875.

I was here when Davis' wharf was built. It was a good substantial structure. When I left here in 1861 it was not in a good condition, and I think was much dilapidated. At that time the wharf had been so injured that steamers could not land their passengers and freight upon it. It had been injured by teredo. For two or three years previous to 1861 it was in such a condition that passengers and freight could not be landed upon it.

When I left here Major Armistead was in command. He informed me then that Virginia had seceded and he would resign his commission.

It was commonly reported at the time the wharf was built that it cost Mr. Davis \$60,000.

There was a warehouse, but I can give no description of it.

No piles which have been used in this bay last longer than a very few years. Culverwell's and Kimball's wharves are all gone, and the former was constantly repaired by putting in new piles.

The channel for deep-draft vessels went by the end of the wharf, so that any such vessel could not come up to any portion of the wharf except the end, and only one vessel at a time.

When I came down from San Francisco, I know the condition of the wharf to have been so bad that passengers and freight had to be landed in boats. The wharf might have been repaired afterwards. There was a break somewhere in the center of the wharf at the time I speak of.

I know George P. Tibbets. He was a man of character and integrity. I would be-

lieve anything he would tell me. He was a partner with me in delivering wood at the barracks, in 1860.

JAMES MCCOY, being duly sworn, testified as follows:

My age is fifty-nine; occupation, farmer; residence, San Diego, Old Town. Have resided here since 1850. Was absent for some time in 1857 and 1858, in Arizona.

The testimony given by me in my affidavit dated September 23, 1874 (printed on pp. 27 and 28 of petition), is correct.

I never paid any particular attention to the condition of Davis' wharf, and know nothing of its condition of my own knowledge. I had personal knowledge of the bad condition of the roads in the winter of 1861-'62.

THOMAS J. HIGGINS, being duly sworn, testified as follows:

My age is fifty-three; am in the real estate and insurance business; own vessels, &c. Residence has been in San Diego since 1870.

I know E. A. Wall, commonly known as "Jack" Wall. I met him yesterday. He showed me a receipt for \$75, dated in 1848, signed by J. Pattee, for a passage from San Francisco in a vessel named, I think, Rosette. He said the vessel sprung a leak and had to put in to Monterey, and he had to wait two months before getting to San Diego. He said he thought Mr. Davis ought to pay him \$50 for his losses by delay. He said he had never spoken to Mr. Davis about it, as his dealings had been with Mr. Pattee, Mr. Davis' agent. He said he did not know much about Mr. Davis' case on the street, but he might if he was called on. He said he might put a big spoke in Mr. Davis' wheel if he should be called upon to testify. Wall said Mr. Davis might buy up as many witnesses as he pleased, but he could not buy him. Mr. Conners remarked to Mr. Wall, in my presence, that he had testified for Mr. Davis, and he had not seen the first ten cent piece yet. He had only told the truth when called on.

At 12.10 p. m. the commission adjourned, and proceeded to the site of Davis' wharf, and examined the stumps of such of the piles as remained above the sand, and found them to be of redwood timber.

JUNE 8, 1881, 3.20 p. m.

JOSÉ M. ESTUDILLO, being duly sworn, testified as follows:

My age is fifty years. I am now a resident of Baja California, Mexico, and am a custom-house officer of the Mexican Republic at Tia Juana, Baja California.

The testimony given by me in my affidavit dated October 10, 1877 (printed on pp. 13 and 14 of petition), is correct.

I did not see the soldiers taking the wharf material away, but I saw some of it at the barracks, and being cut up and burnt by the troops.

At 3.40 p. m. the commission adjourned to meet again at 9 o'clock a. m., June 9, 1881.

JUNE 9, 1881, 9 o'clock a. m.

The commission met pursuant to adjournment.

ROBERT KELLY, being duly sworn, testified as follows:

My age is fifty-five; residence, San Diego County; business, ranchero. I came here in 1850; was connected here in business with the late Col. Asher R. Eddy for five years. My agreement with Colonel Eddy was dated September 11, 1852, and terminated September 11, 1857. My residence in this county has been continuous since 1850.

I am acquainted with the property known as Davis' wharf. I helped to build it. I worked on it in 1851. It was commenced before I went to work on it. It was made of redwood piles, with pine planking. The planking looked to me like Oregon pine.

In 1859 it was said that the steamer Goliath knocked down a portion of it. I don't know how much was injured, and didn't see the steamer run into it.

I am not positive about any storm occurring prior to 1861, severe enough to injure the wharf.

In 1857 Frank Owens and myself went up to Old Town and rented the property known as the Jolly Boy, then kept as a saloon, at which we opened a general store. We wanted a gate to go into the corral, and bought timber from Mr. Davis' wharf, from Mr. George A. Pendleton, to make the gate-frame. Mr. Pendleton was Mr. Davis' agent. Some of the wharf was down at that time. I think the portion I bought was one of the stringers. I don't know what portion of the wharf it came from. At that time, and before, the wharf was considered pretty well eaten by teredo.

Teredo will attack redwood piles. Don't know exactly how long redwood piles will last in these waters. I think redwood piles will last longer than pine, but don't know that there is much difference.

Mr. Evans, a little after that, hauled up a large portion of the wharf to Old Town. I don't know the date, or that it was prior to 1861.

I was well acquainted with George A. Pendleton. His character was very good. I think he would have sent to Mr. Davis any money he might receive from the sale of Mr. Davis' property. I never knew of Pendleton's being accused of any dishonesty.

I know James W. Conners; I think he is a pretty good man. If he should swear that he hauled goods to the end of the wharf and that troops marched to the end of the wharf in 1861, I should think that he only went to the then end of the wharf, as it is my impression that there was a portion of the wharf gone at that time.

I know Louis Rose; I don't like to say anything in regard to his reputation for truth and veracity.

I know "Jack" Wall; with me his reputation for veracity is very good; I have known him for thirty years, and believe him to be an honest man.

I know J. S. Manassee. I can give no good opinion of him for veracity, and because he should make any statements under oath, I should not thereby have any confidence in him.

I know nothing about the troops using the wharf for fuel in 1861-'62. It might have been used without my knowledge.

I am acquainted with the topography of the flat where Davis' wharf was built. [Witness was here shown a pencil sketch.] The channel makes down suddenly all along the bay.

I have seen vessels at the end of the T, but never at the side of the wharf inside the T.

I am not positive that I was on the wharf and saw the injury to it by the steamer Goliath. I don't know whether it was the T which was injured. It was reported that the wharf agent made the steamer pay for the damage. Ships must have come up to the wharf up to the time the Goliath struck it. I don't know of my own observation the extent of the damage. It was said to be considerable.

If such men as Mr. Morse, Mr. Conners, Mr. Rose, Mr. Shiller, and Mr. Manassee, should testify that troops embarked from steps at the end of the wharf 1861, I should think the location of the steps had been changed since the wharf was built. When it was built, I only knew of steps on the side and in the angle of the T.

Of my own personal knowledge I know nothing of the condition of the wharf in 1861-'62, as I was in the country at the time.

I do not mean to say that Mr. Manassee's reputation in the community for veracity is bad—simply that I have no confidence in him.

Wall has been engaged in several kinds of business. Think he came here as a sailor. I don't know that he kept a saloon for selling whisky to Indians. Have bought a glass of whisky from him myself, but don't know of his selling whisky to Indians. I believe him to be perfectly honest.

ROBERT D. ISRAEL, being duly sworn, testified as follows:

My age is fifty-seven; occupation, light-house keeper, San Diego Harbor. My trade is that of a blacksmith. I have resided in this county since 1849, continuously, with the exception of short absences of a few months at a time.

I knew the property known as "Davis' wharf," but not the warehouse. The nearest building to the wharf—except the barracks—was a building used by George F. Hooper as a store.

I think the wharf was built in 1850 or 1851. It was a substantial wharf at the time it was built. It was broken three times by steamers. Can't recollect the dates of the first two times, as I was then living in Old Town. The last time, the steamer Goliath ran into it when it had a large lot of freight on it, and knocked it down. Can't fix the date. Lieut. John Kellogg was here as quartermaster. He belonged to the Third Artillery. I was working for him at the time. I commenced working for Lieutenant Bonycastle, his predecessor, in February, 1855, and kept on until 1857, when the depot was broken up. The date of the injury by the Goliath must have been late in 1856, or early in 1857. Think that about 100 yards of it were knocked down. The length of it seemed longer than the steamer. The piles were eaten off by worms, and the piles and superstructure were both knocked down by the steamer. The piles were eaten away very thin and the wharf was very weak and trembling. It was hardly able to hold up the 100 or 125 tons of freight on it. This freight was on it when it fell.

I don't know what the piles were made of. Some piles will be eaten off in three years; some will last five years; and some even longer than that. I don't know whether redwood piles will last longer than that.

I knew George A. Pendleton. He gave me half of the piece of the wharf knocked down by the steamer Goliath, for towing it to Old Town, and "Jack" Wall hauled it to Old Town from the place on the beach where I landed it. The piece knocked down was the remaining end of the wharf as far as the steamer could come up by putting her bows in the mud.

The T had never been covered with planking—only the piles were driven; and a portion of the end of the wharf had been previously knocked down by the steamer *America*. She knocked the first piece off. No steamers came up to the wharf after the large piece was knocked down. The freight and passengers, after that, were landed by boats. I don't know how much of the original wharf was left after the *Goliath's* collision; should think about two-thirds of the turn and all of the straight part. After the accident Mr. Pendleton gave the remains of the wharf to Mr. Evans, on shares, to tear up and haul to Old Town. Don't remember the dates. In 1861 I bought a plank from Pendleton to put bees on in Old Town. I paid him three cents a foot for it. He was tearing the wharf down and hauling it at that time. He had previously commenced tearing it down and giving it to Evans. I don't know what part of 1861 it was, but am under the impression it was in the spring. I was in the habit of leaving in May for the sealing grounds, and I think it was before I left. It might have been afterwards. I don't remember what portion of the wharf was taken to Old Town in 1861. Steamers could not get to the wharf after the *Goliath* struck it.

I don't remember of any storm here which could have knocked a wharf down.

I know nothing of the volunteers using any portion of the wharf for fuel or lumber. They might have used some without my knowledge.

The winter of 1861-'62 was very wet; I don't know where the troops got their fuel at that time. The severe wet spell did not last over ten or fifteen days. If it had not been for the extra rain at that time the season would not have been extraordinarily wet. I came in from the country on or about the 5th of February, 1862; that was about two days after the heavy rain-storm had ceased. Think the roads were not impassable for more than eight or ten days after the rain had ceased.

I never saw or heard of the wharf being repaired after the steamer *Goliath* had knocked it down. There was no pile driver here, and no new piles could have been driven or extensive repairs made without my knowledge.

I was not out in the country shortly after the severe rain-storm of January and February, 1862, with a team. From my general knowledge of the country, I should say it was safe, usually, to start out in two or three days after a rain; but sometimes it might take ten days to dry up. I have not had sufficient experience with loaded teams to say it would be safe to attempt to haul them within ten days after a severe rain.

(Witness here illustrated the shape of the wharf, and also described the bottom of the bay near the wharf as shoaling rapidly alongside the wharf to what is known as the three-fathom bench, and from that bench deepening suddenly to the six-fathom channel.)

At the time the wharf was knocked down by the steamer *Goliath* I was standing on the wharf about a hundred feet from where the wharf broke. The steamer had not then run in as far as she could, and I should think, at least one stringer's length of wharf was carried away in advance of the point where she struck. The stringers were 18 or 20 feet long.

I knew Captain Bogert; he is dead; he was always considered a straightforward, honest man. I don't think he would have given an affidavit to anything not true. He was in the Pacific Mail Steamship Company's service.

I knew Joshua Sloan; would not believe him for two bits.

The quartermaster purchased no lumber from Mr. Pendleton while I was working for him.

WILLIAM J. LYONS, being duly sworn, testified as follows:

My age is thirty years. I was born in San Diego and have always resided here.

I am acquainted with Mr. Davis; have known him ever since I can remember. He is a friend of mine.

I know "Jack" Wall. Had a conversation with him about three days ago concerning his testimony in this case. I was looking for some evidence for Mr. Davis, and asked Wall whether he would give his evidence for Mr. Davis. Wall said Mr. Davis owed him a bill of about \$75, and if he didn't pay him he would make it pretty hot for him. I then told him that if Mr. Davis owed him a bill, Mr. Davis would pay it if he asked him for it. He then told me that he had written to Mr. Davis on several occasions, and that Mr. Davis had never answered him. He said that if Mr. Davis would give him \$40, he would not appear for or against him. I told him that Mr. Davis wasn't down here to buy evidence of any kind; he merely wanted persons to volunteer to testify to what they knew; but I would see Mr. Davis and see what he said about the debt. I saw Mr. Davis and told him that Wall had asked me to pay him this amount of money and he wouldn't appear against him. Mr. Davis replied that it was impossible, and said he would not stand anything of that kind and that he did not come here to buy evidence of any kind. I saw Wall afterwards, in company with Mr. Crosthwaite. I was then standing in front of Mr. Fairchild's bank; just as they went by me Mr. Crosthwaite said to "Jack" Wall: "If they don't give you that money I'll give in my evidence, and make it d——d hot for them."

Mr. Davis asked me, when he came here, to look up evidence from old citizens for him. He never intimated that he wanted to purchase testimony. I never intimated to Mr. Wall that Mr. Davis would give him \$20 to testify for him, or not to testify in the case.

At 11.30 a. m., the commission adjourned, to meet in San Francisco at a future date.

SAN FRANCISCO, CAL., July 21, 1881.

The commission met at 11 o'clock a. m.

SAMUEL STADDON, being duly sworn, deposed as follows:

I am a native-born citizen of the United States, and am fifty-two years of age. I have resided in Santa Barbara County, California, since October, 1870. I am engaged in mining, and own a bee ranch in that county.

I was a second lieutenant of Company H, Fifth Regiment of Infantry, California Volunteers. On my arrival at New San Diego, in the month of February, 1862, Capt. Thomas Roberts was in command of the military post at New San Diego, Cal.

I acted in the capacity of adjutant for the said post during Lieutenant Smith's sickness and inability. I think Lieutenant Smith was afterwards made quartermaster and commissary. I continued to do duty from time to time, as such adjutant, under Captain Roberts and Captain French, during my stay at said post until April, 1862, when I was ordered to Camp Wright.

On my arrival at New San Diego, Cal., in February, 1862, I found that "Davis wharf" was gone, and was landed in lighters. There only remained about 150 feet on the shore end. I made inquiry of what had become of said wharf, and was informed or told by Captains Roberts and French and the soldiers at said post that the same had been used by the troops for fuel.

During my stay at said post, from February to April, 1862, about 100 feet was consumed for fuel and other uses, and only about 50 feet of said wharf remained when I left said post, in April, 1862.

Capt. Thomas Roberts gave me an order to detail from my command, ten men, to provide said company with wood from the planks and timbers of Davis' wharf.

The warehouse (Davis') was entirely destroyed or used by the soldiers for firewood before I arrived at said post; so I was informed by the troops stationed there.

When Captain Roberts ordered me to provide myself and company with wood or fuel from the remnants of what was remaining of said "Davis' wharf," I asked Captain Roberts if I would not make myself responsible for such destruction; Captain Roberts answered that it was none of my business, and that the government would, some time or other, have to pay for said wharf; that it was a matter of military necessity to have wood for the post, and there was no other way or means of procuring the same from any other source.

I personally ordered my men to take planks and other lumber and timbers from said wharf, and saw said men take the same and carry them to the barracks for fuel. At the same time Captains Thomas Roberts and William F. French had detailed ten men from each company of their command to take the planks and other timbers from said wharf for fuel.

After the departure of Captain Roberts and his command, the remaining troops continued using said wharf for fuel and other purposes, and continued using said wharf for fuel while Captain French was in command of said post, until supplies were furnished by the troops themselves from Sweetwater.

My company was ordered to Camp Wright in the month of April, 1862.

When acting as post adjutant, for a few days, in place of Lieutenant Smith, who was sick, I ordered a detail of ten men to obtain fuel from the Davis wharf. This was when Captain Roberts was in command. About that time I, as officer of the day, asked Captain Roberts for a written order to procure fuel from the Davis wharf, and he refused to give it.

The name of the captain of my company was Sylvester Soper.

The piles which I helped to tear down were in very good condition; some were slightly eaten by worms on the outside.

When I asked Captain Roberts for a written order to procure fuel from the Davis wharf and was refused, I told Captain Roberts that I would obey his orders, but should do so under protest. Captain Roberts then threatened to take the straps from my shoulders if I refused to obey him. After leaving his presence, Captain Roberts called me back, and directed me to have the men cut pieces of stick from the wharf plank, and to strip and use the sticks to stir up the water and scare off the stingarees; also to cut the piles at low tide, and as low down as possible, so as to get all the wood from them we could.

I saw some of the piles split, and they were sound at the heart, though slightly affected by the worm in the sap part of the wood.

The commission then adjourned to meet at a future date.

SAN FRANCISCO, CAL.,
August 25, 1881.

The commission met at 11 o'clock a. m.

Capt. G. C. SMITH, assistant quartermaster, United States Army, being duly sworn, deposed as follows:

I am stationed at Fort Lowell, Ariz.

In January, 1862, about the 20th, I went to San Diego, Cal., as second lieutenant of Company D, Fifth Infantry, California Volunteers, under command of Capt. William F. French. I was stationed there about ten months.

On our arrival there, there was a wharf, or a part of one, which was in a very bad, unserviceable, worthless, and dangerous condition. The main wharf ran out from the beach for some distance to a "cross wharf," making the whole in a shape of a letter L or T. The piles supporting the platform were nearly all wasted and decayed away by the action of the water, and when the tide was out most of them appeared to be more than 2 or 3 inches in diameter along the space where the tide-water was wont to rise and fall. This was particularly the case with the part I have designated as the cross-wharf; and sections of this part had already fallen down from decay of the piles and been carried out by the tide, leaving other sections of this cross-wharf standing in a tottering and shaky condition. I am under the impression that one or two of these parts or sections fell, during the time we were stationed there, from natural decay and their own weight.

There was no warehouse when we arrived, unless the building used as the barracks was the one meant, and that was left in good condition, and I believe is standing there to-day to show for itself.

I do not recollect the troops taking any part of the wharf for fuel; and if they ever did, it was such part as had naturally fallen, and as must inevitably have been carried out to sea or stranded somewhere on the shore of San Diego Bay, and was of no further use or value whatever, as material for a wharf.

During the time we were there very little fuel was required by the troops, on account of the mildness of the weather; and I am under the impression that fuel was furnished by the Quartermaster's Department, but not having been quartermaster myself, I do not remember clearly and cannot be positive on this point.

The condition of the wharf when we left in December, 1862, was about the same as when we went there, with the exception of the parts that may have fallen from natural causes, and floated off, as hereinbefore remarked. It had apparently been abandoned to the elements, and however much it may have cost when it was built, was, on account of its condition at the time, considered valueless by us.

I do not think the government responsible to any degree or in any amount whatever for damage done to the wharf; this damage having been the result of natural causes, and through no wrong or ruthlessness whatever on the part of the officers and soldiers of the California Volunteers stationed there. In fact, I am under the impression that the commanding officers of the garrison, Capt. T. L. Roberts, First Infantry, California Volunteers, and Capt. William F. French, Fifth Infantry, California Volunteers, gave orders against appropriating or destroying any kind of private property at San Diego.

The part of the wharf running out from the shore was in tolerably fair condition when I arrived at San Diego, but the L was in bad condition, and I considered it entirely unserviceable. At one time, while I was there, I think some fuel was obtained, by a detail of men, from one of the islands in the bay.

No ships went up to the Davis wharf while I was there.

I only remember Captain French once ordering use of private property, and that was on a march to Yuma, when a secessionist refused wood for the troops; Captain French ordered his men to take what they needed. He was usually very particular not to allow his troops to appropriate or destroy private property.

I never knew of any portion of the wharf being used for fuel, at the barracks or hospital, while I was at San Diego.

I think there was a plank guard-house there when I went to San Diego. Do not think there was any guard-house built while Captain French's command was stationed there.

There was an old building moved from between the old barracks and the officers' quarters to a place on the shore, and used as a privy. The materials did not come from the wharf.

I don't think steamers ever came near enough the wharf, during my stay there, to knock down any portion of it.

I used to be acquainted with Lieutenant Staddon. He belonged to Captain Soper's company. He came there about the month after I came, and I think he only staid there a month or two. We did not usually consider Lieutenant Staddon's reputation for veracity to be good. He used to tell some pretty hard yarns. He, at one time, said he was a nephew of Secretary Stanton, and had changed his name to Staddon.

I think it was before the 25th of January, 1862, and feel certain that it was not in February, that I arrived at San Diego. I left Camp Union, three miles from Sacramento, California, with my company, I think, about the middle of January. Captain French was with the company at that time. It is possible that Lieutenant Staddon went down on the same steamer, but my impression is that he did not.

When we arrived at San Diego, the steamer did not go up to the wharf. We were landed in boats. I think no part of the wharf fell at the time we landed. I do not recollect that any section of the wharf fell during the disembarkation of my company. I think that a step or two on the wharf broke, and one or two men got wet.

When we arrived, the shore end of the wharf, out to the L, appeared to be in sound condition, and the planks all firm. I think I have seen carts drive out nearly to the L. I know they could have been driven there. On part of the L the planks were on, and on some parts of the L they were all gone. The piles to the L appeared to be about a foot in diameter, but were eaten down to the heart, and where eaten did not seem more than three or four inches in diameter. This was the case with nearly all the piles of the L.

I knew Dr. Hoffman. I would believe him under oath. I never heard his character for truth and veracity questioned.

I was only acquainted with Lieutenant Sherman for a few days. I am not certain it was not a week. I am certain it was not a month. I have never heard his character for truth or veracity questioned. I did not know him long enough to get well acquainted with him.

I knew Captain Grant for a few days. His character for truth and veracity, and as an officer, was, so far as I know, good.

I would believe Lieutenant Sherman and Captain Grant under oath.

I knew Joseph S. Manassee. He was a merchant. Don't ask me any questions about the veracity of those Jews. I don't know whether I would or not believe them under oath. Don't know anything against Manassee. I knew Manassee about ten months. I don't have any confidence in the word of Jews, even under oath. I never heard his character for truth or veracity questioned, or that his reputation was bad. From my knowledge of him, I would not disbelieve him under oath.

I knew Dr. Randle. He was on duty at San Diego only a short time. I have heard his character for truth and veracity questioned by officers at the post. We considered him a hard story teller. I would not believe him under oath in a case where he was interested.

I knew James Connors and his family. When I knew him he was a hard drinker: a drunken, shiftless sort of a fellow, and not very high in the moral scale. He was considered a good fellow. I knew Mrs. Connors. I thought she was a good woman. I should believe both of them under oath. I always liked Connors.

I never was relieved by Lieutenant Staddon of my duties as post-adjutant. I never was sick but one day during my volunteer service. If he did act as adjutant in my place he did not act more than one day, and I doubt very much that he ever so acted at all. No detail was ever made by me as adjutant to tear up the wharf, and if Lieutenant Staddon did make such detail it could only have been on the one day while I was sick. I don't know who did act as adjutant if I was sick.

No wharf materials were to my knowledge used for building a guard-house.

I have received letters regarding my testimony in this case other than that from General Saxton. One was from B. T. Catlin and one from M. E. Burke. I did not answer Catlin's. Burke's letter was written at the instance of Catlin. I answered Burke's letter, but my answer had no particular reference to my testimony in this case. The tenor of Catlin's letter was inquiry as to what I knew about the case.

I do not remember how the wood for the post was supplied, but I think one day when I was on the island hunting, I saw some of the soldiers over there cutting wood. All the wood for the post was not, however, procured in that way. I think there was a contract. I recollect there was a detail of men to cut wood, but I know nothing of the quantity they brought over. The wood got by the soldiers was very small and not of much account as wood. Don't know that the detail was ever made but once. They might have been sent at other times, from the quartermaster's detail.

I don't recollect that any of the wharf was ever used as fuel. I can't swear that none was so used. I never saw any of the wharf material lying around the barrack yards. If the soldiers had used any of the wharf timber which had been lying around the beach, I should have given it no thought. I did not know whether the wharf was government or private property. It might have been used without my knowledge. I don't believe it was so used.

Captain French was considered a very good officer, as regards his military qualifications. He used to go on a spree now and then, and then keep sober for a long time. He might have had two sprees in a week or a month, and then might not have had any more for a month or two. There was a mutiny while he was in command. I don't recollect whether the mutiny occurred while he was on a spree. I always found him so far as I was concerned, a pretty square sort of a man. I did not at that time consider his character very good. I consider him a pretty decent sort of a man now.

I have seen Captain French since my arrival in San Francisco. I have discussed this case, somewhat, since I have been here, both with Captain French and Mr. Catlin. One of the principal reasons of my going to see French was to discuss this case. We talked but very little about it, however.

I knew George Tibbets, E. Van Valkenburg, D. B. Kurtz, and Capt. J. C. Bogert. I never heard their character for veracity questioned, and should believe them under oath.

I have always thought Mr. Catlin's character to be good. I have known him since 1854 or 1856, when he was a boy. I would believe him as quickly as anybody. He was adjutant's clerk at San Diego.

I don't recollect ever hearing the matter discussed, at the post, about the destruction of the wharf before I came there.

I have no reason to doubt Captain French's word, and would believe him under oath.

The commission then adjourned to meet at a future date.

SAN FRANCISCO, CAL., *September 1, 1881.*

The commission met at 11 o'clock a. m.

LEONIDAS E. PRATT, being duly sworn, deposed as follows:

I have known Dr. P. W. Randle for about sixteen years. I think his reputation for truth and veracity as good as that of any man in the State of California. Should be terribly astonished if he made a statement that was not true. I would believe any statement which he would make, under oath or otherwise, unless contradicted by overwhelming evidence.

My first acquaintance with Dr. Randle was in the Grand Lodge of Free Masons, about sixteen years ago—he was past junior grand warden—and that is a place where men get very close to one another, and analyze one another's character very thoroughly.

I think if there was any question as to his veracity, or to his character in any respect whatever, that at some time during these long and intimate relations I should have had some intimation of it. I never heard him spoken of except in the most respectful terms. He could not have occupied the position unless his character had been above reproach.

I have been district attorney, district judge, and State senator. I was grand master of Masons in this State for four years.

P. W. RANDLE, being duly sworn, deposed as follows:

I am not pecuniarily interested in the claim of William H. Davis *vs.* The United States, nor interested in any way whatever in the case.

(Attorney for claimant then introduced the following letters, in evidence of the character and standing of P. W. Randle.)

"Having been requested to state my opinion of the character and standing of Dr. P. W. Randle, of San Francisco, I do not hesitate to say that he is regarded by those who know him as a gentleman of probity and honor; truthful and intelligent. His statements, whether under oath or not, are entitled to credence and the fullest confidence. I should certainly rely implicitly upon the truth of any statement of fact he should make.

"Very respectfully,

"JOHN F. MILLER.

"U. S. S.

"NAPA, CAL., *August 29, 1881.*"

"POST-OFFICE, SAN FRANCISCO, CAL.,

"*September 1, 1881.*

"General R. A. SAXTON,

"*United States Army, &c., Presidio of San Francisco, Cal. :*

"DEAR SIR: The bearer of this is my friend Dr. P. W. Randle. I know him to be a man of probity and honor. Any statement he may make, under oath or otherwise, is entitled to the fullest credence. I have the honor to commend him to your kind consideration.

"Very respectfully,

"JAMES COSY."

BRANT T. CATLIN, being duly sworn, deposed as follows:

My age is fifty-one; my occupation, entry clerk, naval office, custom-house, San Francisco.

I arrived at San Diego Barracks, California, on or about the last day of October, 1861. Was a private in Capt. Thomas L. Robert's Company E, First Infantry, Cali-

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fornia Volunteers. I remained at San Diego Barracks, in said company, until about the middle of March, 1862, at which time Captain Robert's company was relieved by Capt. William F. French's Company D, Fifth Infantry, California Volunteers. I acted as post sergeant-major of the command during the entire rainy season of 1861-'62.

I know of the wharf alleged to have been destroyed by the troops at that post. I know of no order having been issued by the commanding officer for the destruction or use of this wharf for fuel or other purposes. As post sergeant-major I made the details for all guard and police parties. I never made a detail for the purpose of breaking up the wharf or knew of such a detail being made. Had such a detail been made or issued, I should have known it, as all orders were recorded by me in the post order book. To the best of my knowledge, no portion of this wharf was ever used for fuel by the troops. I saw the wharf every day while I was at San Diego, and walked the entire length of it nearly every day.

At the time of my arrival at San Diego the wharf was in a very dilapidated and decaying condition; so rotten, in fact, that it was not safe for vessels to moor to it; and all vessels arriving during my stay at San Diego anchored in the bay. The only portion of the wharf standing when I arrived was that portion from the shore end to the L, and about one-half of the portion which was then standing was in good condition. Of the L at the outer end of the wharf nothing remained except a few piles and loose planks, which were utterly unsafe.

There is an insect or worm—I believe not a teredo—which eats piles “between wind and water.” This worm or insect eats the piles from the surface toward the heart, leaving the upper and lower portion meeting like the points of two pencils. These were often detached, and I have seen the upper portion of the piles hanging loosely above the lower portion, suspended by the framework of the wharf.

When I left San Diego, the wharf was remaining in very nearly the same condition as when I arrived there; the only exception being the falling of two portions into the bay, on occasion of embarkation and disembarkation of troops. First, when Major Haller's command embarked for the East, about the 1st of December, 1861, and second, on the occasion of the disembarkation of Captain French's company, about the 25th of January, 1862. Even the rotten fragments which fell into the bay were not fished out by the troops and used for fuel.

The winter of 1861 and 1862 was an unusually severe winter. The excessive rainfall made the roads impassable for teams and loaded wagons from about the latter part of December, 1861, to the middle of March, 1862, making it impossible to procure fuel for the post from the usual sources of supply. Fuel was procured from an island or spit of land forming the outer barrier of the bay. A portion of the necessary fuel for the winter had been supplied by contract. When it became necessary to procure fuel from other sources, a boat or scow was constructed by the troops at the post from lumber furnished by the quartermaster, and in that and in an old whale boat, wood was transported across the bay from the aforesaid island or peninsula, being gathered by police parties, detailed, when necessary, from the adjutant's office for the purpose. Sometimes these details remained on the island two or three days, their rations being sent to them from the post. A portion of the fuel so gathered was roots of small trees, which the soldiers dug out, and carried to the boats in their arms. Most of the fuel was small, and not much of it larger than my arm, and none larger than my leg.

There was no warehouse on the wharf, and no building that I knew of which was used for that purpose.

I don't recollect the wood contractor's name.

I don't know how much wood there was at the post when I arrived there, but am under the impression that the quantity was not large.

According to the best of my recollection, the rains commenced about the middle of December, 1861.

I suppose, but I don't know, that the lumber of which the scow was built was received from San Francisco. I was not in the quartermaster's department. I know it was new lumber.

Details for procuring wood from the peninsula were made as often as necessary. They were very often necessary.

From the early part of the winter, Lieut. William A. Thompson, First Infantry, California Volunteers, was acting as post adjutant. Lieut. G. C. Smith, Fifth Infantry, California Volunteers, succeeded Lieutenant Thompson.

The wood obtained from the peninsula was not of a very good character, but it answered as a substitute. We cooked with it. Wood was gathered from the peninsula in quantities sufficient for the post, according to my recollection.

When Captain French's company arrived and disembarked on the wharf, a portion of the wharf, about 20 by 40 feet, fell down. This is as near as I can recollect of the size, after twenty years.

Possibly 15 feet at the outer end of the wharf fell when Major Haller's command embarked in November or December, 1861; I should judge about 15 feet square. The portion which fell was from the extreme outer end of the portion of the wharf then standing.

When Captain French's company disembarked, the vessel did not come up to the wharf, and, according to my recollection, the troops were transferred to the wharf in small boats. I don't know by what means the men got on the wharf. I suppose it was the weight of the baggage and men upon the wharf and the weak condition of the wharf that made it fall in. I don't know that any of the baggage was lost. I have seen and talked with more than three men who said they fell in the water when the wharf fell in. There might have been ten men, and there might not; I don't recollect. According to the best of my recollection, there was a section of the wharf fell, with a portion of Captain French's company upon it. I don't recollect whether there were twenty, thirty, forty, or fifty men. Where the men fell, it might be 300 or 500 feet from shore. The portion which fell became detached from the wharf; I don't know what became of it.

I recollect the articles written in the San Francisco Chronicle in reference to this claim about two years ago, and I know who either wrote the articles or furnished the data on which they were based. To the best of my belief one article was written by John J. Crossen. He is dead. He was a member of Captain Roberts' company during the three years I was with it. Other articles were written by a reporter of the Chronicle, since deceased, from information partially given by me. Prior to the publication of the first article in the Chronicle, I had no conversation in regard to the publication of articles in Chronicle against this claim. I furnished information to a reporter of the Chronicle for some of the articles.

Captain French and myself made our affidavits, which are before the War Claims Committee, on the same day and before the same notary. No one prompted me to make the affidavit; I made it that justice might be done. I was in Mr. Waite's naval office at the time and discussed this subject with him. He did not suggest, but he did advise, the making of the affidavit. I suppose his motive was the same as mine, that justice might be done the government and the memory of those charged with wanton destruction of private property. I suppose Mr. Waite knew nothing of the facts in the case except from what I and others told him. The only motive I ever had in making the affidavit was, as I have stated, that justice might be done.

I think the majority of the Chronicle articles were directed against the Hon. H. F. Page. Some of the articles bitterly denounced Mr. Page. It was not my understanding that the object of the articles was to defeat the renomination of Mr. Page to Congress. I don't know that it was not the object. I think the articles stated that it was Mr. Page's purpose to get this claim through, to get the "sinews of war" to conduct his canvass, or language to that effect.

It is common report that the relations of Mr. Waite and Mr. Page are very unfriendly.

Question. (By claimant's attorney.) Do you know of any facts which would lead you to believe that there exists an enmity on the part of Mr. Waite towards Mr. Page?

Answer. I know of no facts of my personal knowledge. I don't know that Mr. Waite testified against Mr. Page in the Placerville trial. I suppose it was considered that Mr. Waite went to Placerville to assist the Chronicle in its fight against Mr. Page. Mr. Waite went to Placerville in charge of the sheriff, under subpoena. The articles in the Chronicle appeared a few months after the Placerville trial.

Question. Did you lend your assistance to the Chronicle for the purpose of defeating Mr. Page?

Answer. I did not. If I had been in Mr. Page's district I should have voted for him.

Question. Did you not know that it was the Chronicle's purpose, in publishing those articles, to defeat Mr. Page?

Answer. I did not know; I suppose it was. I gave information twice to the Chronicle upon which those articles were practically based. The majority of the articles in the Chronicle were directed against Mr. Page. I think that both of the articles for which I furnished information were directly against Mr. Page. Mr. Waite did not advise the giving of the information to the Chronicle for the purpose of defeating Mr. Page. I had no right to suppose what his motive was.

Question. (By claimant's attorney.) Did you ever intimate, in any way, to any one, that you would make your future out of, or build yourself up, or benefit yourself, by opposing this claim?

Answer. I answer this emphatically, no!

Question. Did you ever make any statement that you had been threatened or intimidated in any manner whatever if you did not cease your opposition to this claim?

Answer. I have been told on several occasions that if I did not cease my opposition to this claim I would be injured, but not by parties connected with the claim. That remark was probably based upon the opinion of my informants.

Question. By whom were you told?

Answer. I can't recollect any particular person.

Question. What intimidation was used and by whom?

Answer. In the course of conversation, remarks have been made which impressed me as intended to interfere with my freedom of action in regard to this claim. I don't

remember dates, times, nor persons. I have frequently said that this was not a just claim. My opposition has not been of a bitter character. I never made any statement that General Saxton had promised to protect me in event of my being injured by my opposition to this claim.

Question. Did you ever state to W. Ford Thomas, deputy collector E. F. White, or William F. Swasey, that your motive in opposing this claim was the defeat of the renomination of the Hon. H. F. Page, or words to that effect?

Answer. I decline to answer.

Question. Do you know Dr. D. B. Hoffman, E. Van Valkenburg, G. P. Tibbets, James W. Conners, Harriet Conners, and Matthew Sherman?

Answer. Yes.

Question. What was their reputation for truth and veracity.

Answer. I would have no reason to doubt their word under oath.

Upon reviewing the testimony in this case I remarked that was possible some damage might have been done to the wharf, not of my knowledge, and if so, the claimant ought to be remunerated. Did I know nothing about the claim except the testimony of the claimant's witnesses, from my knowledge of the witnesses in its favor I should have believed that Mr. Davis was entitled to compensation. I have always regarded many of the witnesses are men of veracity.

E. G. WAITE, being duly sworn, deposed as follows

I had no motive in opposing the Davis claim, except in doing my duty to the government. I knew nothing about the claim until Mr. Catlin brought me a newspaper, or stated that it was in a newspaper, that a bill had been introduced in Congress to pay this claim. He stated that he was in service at San Diego, and that the claim was baseless, and that he and Captain French were at San Diego at the same time.

I had conversation both with Captain French and Mr. Catlin about the claim. I said if no one else would bear the expense of getting testimony in opposition to this claim (if it was fraudulent), I would do so myself, and I did so. I paid for getting up the first testimony which was sent to Senator Booth. Afterwards I heard of a man who had been in the service of the government for thirty-nine years, who was sick on Goat Island. I sent a notary public to Goat Island to take his testimony, and forward his testimony to Senator Booth.

I don't know the claimant, and my motive in procuring testimony in this case was simply that I was an officer of the government, and felt it my duty to protect it from any fraudulent claim.

Mr. Catlin and Captain French were clerks in my office at that time. They were not appointed by me. I found them there when I went into office.

I have not the slightest knowledge of this claim, except from information.

I think very likely I advised Captain French and Mr. Catlin to make the affidavits.

I have never been on unfriendly relations with Mr. Page.

I knew information was given by Mr. Catlin to the Chronicle. I did not advise it. I think one of the articles alluded to Mr. Page. I have not been unfriendly to Mr. Page. My relations with him have always been friendly. I was subpoenaed by the Chronicle parties in the Placerville trial. At the time I testified in the Placerville trial, I can say that I was not a warm friend of Mr. Page. I was not then a bitter enemy.

WILLIAM F. SWASEY, being duly sworn, deposed as follows:

I have had several conversations with Mr. Catlin regarding his motive for opposing the claim of W. H. Davis. The first knowledge I had of the claim I received from Mr. Catlin, at which time he stated, most emphatically, in unmistakable language, that his motive for opposing the claim was his inimical feelings towards Mr. Page. He had learned from me that Mr. Davis was an old and very dear friend of mine, and he disclaimed having any feeling against him; that he believed it was a scheme of Mr. Page's, and intimated his belief that Mr. Page was pecuniarily interested in the claim. In after conversation with him, after I had talked with Mr. Davis, I assured him of my firm belief that Mr. Page had not one dollar of pecuniary interest in the claim. During those conversations he intimated very clearly and distinctly that he was not disposed to be as bitter in his opposition to the claim as he had been before, but that having given his own testimony, and having aided in procuring other testimony against the claim, to be consistent, he felt obliged to keep up his opposition. Frequently, in the earlier conversations, he denounced the claim very bitterly.

At the time when Mr. Waite was succeeded in the naval office, Mr. Catlin remarked, in my presence, that if he should lose his place he would get even on this claim.

The commission then adjourned to meet at a future date.

SAN FRANCISCO, CAL., *September 17, 1881.*

The commission met at 2 o'clock p. m.

Testimony of Alexander T. Abell.

ALEXANDER T. ABELL, being duly sworn, deposed as follows :

I have known Dr. P. W. Randle for fifteen or more years. I first knew him when he was elected junior grand warden of the grand lodge of Masons. I know of no reason why I should doubt his veracity, and would believe him under oath or otherwise.

I have been State senator in California. My principal occupation for twenty-six years has been secretary of the grand lodge of Masons of this State. I have been for several years a member of the Republican State Central Committee, and for four years its chairman.

Testimony of William F French.

WILLIAM F. FRENCH, being duly sworn, deposed as follows :

The statements made by me in my affidavit of January 27, 1879, are true. My affidavit of October 30, 1877, was based upon a conversation between myself and Mr. White. Mr. White submitted the affidavit to me and I signed it. A good deal of that affidavit is based upon information given me and is not of my own knowledge.

I first saw the wharf in 1852, and it then appeared to have been recently built, and was then a substantial structure. When I next saw the wharf was when I arrived at San Diego in command of Company D, 5th Infantry, California Volunteers, and it was then in a very decayed and dilapidated condition.

I don't think any portion of the wharf could have been used by the troops, while I was at San Diego, without my knowledge.

I have testified before in this case. I first testified October 30, 1877, then January 27, 1879, and reaffirmed the latter affidavit May 23, 1881. The facts stated in both affidavits are true. I believe the copies of the affidavits made by me, here presented, to be true copies of the originals.

The reason for my making the second affidavit was that I understood that a claim was being prosecuted for the destruction of the wharf by troops, and I deemed it my duty to state that no such destruction occurred during my command at San Diego.

I think the wharf was left standing out to the L when I arrived at San Diego, January 25, 1862, and that but very little of the L was then standing. I have no recollection of the length of the wharf. I think it was over three hundred feet; I don't think it was over six hundred feet.

My company was landed at San Diego in ship's boats; I think from the Senator. I personally superintended the disembarkation of my company. I was among the first to land. The party I landed with got from the boats to the wharf by means of steps on the side of the wharf. There were between eighty and ninety men in my company. A portion of the wharf broke down when my company landed. When it broke I was standing on the shore, I heard a crash, shouting and laughter of men, and found that a portion of the wharf had fallen. I didn't go to see how much had fallen. I was eleven months at San Diego. I can't tell how large a piece of the wharf fell. When I arrived I think about two-thirds of that portion of the wharf which was then standing was serviceable. I think the baggage was transferred from the wharf to the barracks by hand. I don't recollect that there were any carts.

(Attorney for claimant here offered the affidavit of Capt. William F. French, dated October 30, 1877, in evidence. The affidavit is as follows:)

Affidavit of William F. French.

STATE OF CALIFORNIA,
City and County of San Francisco :

WILLIAM FRENCH, being first duly sworn, deposes and says:

That he is a citizen of the United States, and of the State of California, and a resident of the city and county of San Francisco.

That in the year 1852 he saw the wharf and warehouse, belonging to Wm. H. Davis and located at New San Diego, Cal., known as "Davis" wharf and warehouse, and that the same was a very capacious and substantial structure.

That about the month of February, 1862, he arrived at New San Diego, in command as captain of Company D, Fifth California Volunteer Infantry, and took command of the military post there, relieving Capt. Thos. Roberts. That at the date of his arrival there was but little of the wharf left standing.

That soon after taking command he was informed that said property had been taken by the troops stationed at the post for fuel and other necessary purposes, and that the taking and using of the same was unavoidable on account of the failure and inability of the post contractor to furnish supplies or wood, by reason of the flooded condition of the country and impassability of the roads.

That he being unable to obtain supplies of wood for the post from either the contractor or surrounding country, and desiring to avoid the necessity of appropriating private property, procured a boat with which he obtained the same from an island in the bay.

W. F. FRENCH.

Subscribed and sworn to before me this 30th day of October, A. D. 1877.

JAS. F. O'BEIRNE, [SEAL.]
Deputy Clerk and Commissioner of United States Circuit Court, Cal.

Examination resumed.

I was told by parties at San Diego, after I arrived there, that some of the wharf had been used by the troops. I don't remember who the parties were who gave me the information. They stated that the reason was that the troops could not get fuel otherwise. I do not know whether there was any wood on hand at San Diego when I arrived there. While I was at San Diego the wood was procured from an island by details of troops until the roads became passable, and wood could be hauled in from the country. I think the details for procuring wood were made daily or every other day, as required. The boat with which wood was transported was built when I arrived.

I don't know whether any guard-house was constructed or partially constructed while I was at San Diego. Such might have been constructed without my knowledge. No guard-house was constructed or partially constructed while I was in command of the post. I was in command from March 14, 1862, until November, 1862, except a short time, when Colonel Dobbins was in command. If one was constructed from March to November, I think I ought to have known it. There was a guard-house there when I went there.

I did not dictate the facts of my first affidavit to Mr. White. He might have made some notes while standing at my desk. I don't know. I don't think Mr. White read over any notes to me which he had made of my conversation with him. Subsequent to the conversation Mr. White handed me an affidavit. I read it before I subscribed to it. The facts stated in that affidavit which are of my personal knowledge I know to be true. I know all to be true except that which I stated on information.

I think the roads became passable about the middle of March.

Testimony of David Wooster.

DAVID WOOSTER, being duly sworn, deposed as follows:

I have been a practicing physician in California since 1856. Was surgeon of the Fifth Infantry, California Volunteers. I knew Lieutenant Staddon, of that regiment. I think he is an honest man, and I would believe him as quickly as any man under oath. I believe him to be a simple-minded, upright man.

My impression is that the destruction of Davis' wharf at San Diego by troops was notorious at the time, but I know nothing about it of my personal knowledge.

Testimony of W. Ford Thomas.

W. FORD THOMAS, being duly sworn, deposed as follows:

I am deputy collector of customs at San Francisco.

I had several conversations with Mr. Catlin, but not much talk with Captain French. in regard to Mr. Davis' claim for damages done to his San Diego property by troops. Mr. Catlin assigned as a motive for opposing the claim, that he did not think it a just one, and that he did it to beat Mr. H. F. Page. I inferred that he wanted to beat Mr. Page politically, and to beat him in his advocacy of this claim. My impression was that he desired to defeat Mr. Page's renomination for Congress.

Testimony of E. F. White.

E. F. WHITE, being duly sworn, deposed as follows:

I am collector at the United States mint, San Francisco. After my return from Washington, having learned while in Washington of Mr. Catlin's opposition to the bill, I called on him in San Francisco, mainly to find out his reasons for opposition. He stated that he took sides against the bill for the purpose of "getting even" on Page.

When I assured him that Mr. Page had no interest in the bill, nor had done anything in its behalf, more than any representative on the Pacific coast, he expressed his regret, and said that if he had known the fact that Mr. Page had no interest in the claim he would never have made any opposition to it, and that he thought Mr. Davis was entitled to some compensation. He made the statement several times that he wanted to "get even" on Page, and therefore opposed the claim. Until his opposition was noted by the filing of his (Catlin's) affidavit in Washington, I never had any knowledge that Catlin had been a soldier, or that he had any knowledge of this claim.

Within a day or two before Captain French made his affidavit of October 30, 1877, Mr. Davis learned that Captain French was employed in the custom-house or post-office in San Francisco. Mr. Davis did not know which. He asked me to aid him in finding the captain. I found that Captain French was employed as a clerk in the naval office, custom-house. Through Mr. Waite, then the naval officer, with whom I was well acquainted, I obtained an introduction to Captain French, at his desk. I conversed with him about his knowledge of the claim, made rough notes on paper furnished by him, and read those rough notes to him and obtained his sanction thereto. I returned to my office and wrote the affidavit, and the following day presented it to him; he read it, crossed with me to the office of the clerk of the United States court, and swore to it.

The dismissal of employes in the naval office is practically under control of the naval officer.

I am a friend of the claimant and have advanced money to aid in the prosecution of his claim.

Testimony of James Alexander Forbes.

JAMES ALEXANDER FORBES, being duly sworn, deposed as follows:

I am forty-three years of age, and my present occupation is in the department of the Spanish archives of the United States surveyor-general's office in San Francisco. I was born in California.

I am familiar with the history of the property, for the destruction of which Mr. William H. Davis has filed a claim. I visited San Diego, yearly, for several years prior to the destruction of the wharf and warehouse by the United States troops. The wharf was a splendid and very expensive structure, and I do not think that there was a finer or more substantial work of the kind on the Pacific coast at that time. I saw the property when it was in prime order in 1858, and passed over the same in 1859, and again in 1860, and was again on the same in July, 1861. At this last period, to wit, July 1, 1861, and during my stay then at San Diego, I was on or near the wharf very often. It was then in a good business condition, and would have lasted a long time thereafter; and with occasional repairs I believe it would be in existence to-day. I was then told that the wharf could not have cost less than from seventy-five to eighty thousand dollars, and it certainly could not have been built for a less sum at the time of its destruction. It extended some seven or eight hundred feet into the bay, and had a T or L at the water end, which was about one hundred and fifty feet wide and several hundred feet long.

I have seen the soldiers destroying the property. This was a necessity, on account of the tremendous rains we had at that season, which prevented wood being brought to the city. Fuel was very scarce, and could seldom be had, and then it sold for \$24 per cord. During the visits I frequently saw large piles of the piles and planking split up and lying around the barracks.

I believe, and do not hesitate to state, that when I saw the property in July, 1861, it could not have been worth less than from \$60,000 to \$70,000.

I last saw the wharf in 1863 or 1864; there was a remnant of the wharf there then. In the winter of 1861-'62 I saw the soldiers destroying the wharf. When I last saw the wharf there was not much left of it. I didn't notice the piles being worm-eaten. I think if the wharf had not been destroyed by the troops it would, with ordinary repairs, be there to-day; I don't know whether the piles would have lasted until to-day. I think some of them would. I have no reason to doubt that some of the piles would have lasted until this time. I never heard of piles being eaten off by worms in San Diego Bay. I have been familiar with that bay since 1858.

I might have seen the soldiers taking planks from the wharf and carrying them to the barracks and splitting them up, thirty times; I am sure I saw them more than half a dozen times. The destruction of the wharf by the troops was notorious in San Diego, at the time. I never saw soldiers cutting the piles off. I think a portion of the L was standing in 1863; I don't recollect what particular part of the wharf the soldiers took planks from.

I think if a vessel had struck the wharf it would have been apt to damage the vessel, if it had been a schooner.

Testimony of Matthew Sherman.

MATTHEW SHERMAN, being duly sworn, deposed as follows:

I have heretofore testified in this case.

The present guard-house at San Diego appears to have been built of lumber which has been in service in a wharf.

I went to San Diego in November, 1862, with troops, and remained on duty there fourteen months, as post quartermaster. I returned to San Diego in 1865, and have resided there since.

The guard-house was commenced by my predecessor, Lieut. Glashy, of Captain French's company; I don't know that Lieutenant Glashy told me that he commenced it. Its appearance was that of being recently constructed.

In the summer of 1868 I met Mr. Catlin in the custom-house at San Francisco. We had some conversation about this claim. Mr. Catlin abruptly commenced talking about the claim, shortly after my introduction to him, and that led me to ask Colonel Cullum if Mr. Catlin was an officer of the government to look after this claim.

General Babbitt was quartermaster at San Francisco when I was at San Diego. I sometimes found difficulty in getting requisitions on San Francisco filled.

The wood to be obtained from the peninsula was mostly greasewood; the roots might have been good fuel.

(Attorney for claimant then introduced the following affidavit, as testimony as to veracity of witnesses, G. P. Tibbets and E. Van Valkenburg:)

STATE OF CALIFORNIA,
County of Santa Barbara, ss:

I, D. P. Hatch, judge of the superior court of Santa Barbara County, do swear that I have known G. P. Tibbets for six years, and E. Van Valkenburg for about five years. That, in-so-far as I know, said persons are honest and truthful, and their word would not be questioned in any court. They are good citizens.

D. P. HATCH,
Superior Judge.

SANTA BARBARA, June 15, 1881.

Subscribed and sworn to before me this 15th day of June, 1881.

A. B. WILLIAMS,
County Clerk.
By T. L. KELLOGG,
Deputy.

Testimony of S. S. Culverwell.

S. S. CULVERWELL, being duly sworn, deposed as follows:

I have heretofore testified in this case that I used a few of the old piles of the Davis wharf in the construction of my wharf at San Diego. I think I so used some twenty or twenty-five piles. My wharf was about one-eighth of a mile from his. I saw them six years ago; they were then in good condition, and not worm-eaten. I understand that schooners land there now, where those redwood piles were driven. I am sure redwood piles will not be attacked by worms—or at least I never knew them to be.

I mean to say that Santa Cruz black-heart redwood piles will not be attacked, but it may be that Mendocino redwood will be attacked.

The commission then adjourned to meet at a future date.

SAN FRANCISCO, CAL.,
September 28, 1881.

The commission met at 12.15 a. m.

Testimony of J. F. Morris.

J. F. MORRIS, being duly sworn, deposed as follows:

I have known Lieutenant Staddon since he has been in Santa Barbara County. So far as I know his character for truth and veracity is good, and I would believe him under oath or otherwise. I was attracted to him by his retentive memory and ability to remember events in detail. Lieutenant Staddon's habits of life are very good, and I consider him a very well preserved man for his age.

I have been in the hotel business for several years in Santa Barbara County, and am now a resident of Alameda County, California.

Testimony of John P. Sheldon.

JOHN P. SHELDON, being duly sworn, deposed as follows:

I have heretofore testified in the case of the claim of William H. Davis against the United States for damages done to his property at San Diego, Cal., during the war.

I have had a long and varied experience in wharf building upon the Pacific coast. I am intimately acquainted with the kind of piles used upon this coast, and well know the durability of all kinds of piles used in wharf building on said coast. There is no comparison between the durability of redwood as against pine piles; the redwood generally last a lifetime, and I am inclined to think they are indestructible, either by the action of the water or any worm or insect known in the waters of this coast.

I have, within the past two months, and since testifying before General Saxton, removed and withdrawn redwood piles from the Larue wharf in the waters of the Bay of San Francisco, where the teredo abounds, and they were sound to the core; while the pine piles were all unfit for use, and some of them utterly eaten off by the insects in the said waters. These redwood piles were driven prior to 1854, and I recapped those that I did not draw, as they were as perfect as when driven. The portion of that wharf left was about 100 feet square, and all the piles supporting that portion are redwood piles, and I would have redriven the redwood piles drawn, but they were not of sufficient length, as the wharf had to be raised 2 feet.

I examined the wharf of the Pacific Mail Company at Benicia, about one year and a half ago, with the intent of purchasing it. It was built in 1851-'52, and the under structure was of redwood and pine piles. The redwood piles were perfect in all respects, and at least 10 per cent. of the pine piles were totally useless.

The reason that redwood piles are not used entirely in building wharves is, that they are very hard to procure.

I have been told by Mr. Davis that his piles were taken from near the coast, and there is considerable difference in favor of this class of piles as against redwood piles procured inland.

I have built at least 4,600 feet of the sea-wall of San Francisco in the past three years, under the direction of the State harbor commissioners, and have been in the lumber business and wharf building since 1852. I employ a large force of men constantly in my business, and have a large force working for me now.

I would unhesitatingly say that any one testifying that redwood piles would be eaten to within 3 inches in diameter after being driven for the space of only ten or fifteen years, is unquestionably mistaken, as I have never yet seen a redwood pile that has ever been rendered unfit for use by any insect of any description in the waters of the Pacific coast.

Redwood piles taken from the coast are black hearted and hard, and those taken from inland are softer. Those from Mendocino County are of the former description if cut near the coast.

Some of the piles in the Larue wharf are from the hills back of Oakland.

I have never seen a redwood pile coppered.

The Pacific wharf was built in 1852-'53 or '54. I removed the piles about five years ago. I did not notice that any of the redwood piles were decayed.

Testimony of E. C. Boobar.

E. C. BOOBAR, being duly sworn, deposed as follows:

I have lived in California going on thirty-two years. I have been a wharf builder and pile driver for twenty-eight years.

My experience with redwood piles has been that the worms do not trouble them as they do pine piles. I have known redwood piles to last for twenty years.

The Pacific wharf in San Francisco was built principally of redwood piles. I have replaced pine piles in that wharf, but no redwood ones.

I have done nearly all the United States Government wharf work here, and a good deal for the State harbor commissioners.

I extended a wharf at Santa Cruz fourteen years ago, of redwood piles. They are there yet, in good order. When I drove those piles they had been recently cut and sent to me, and being cut at the wrong time of the year the bark came off of nearly all of them. The bark is a great protection, especially to redwood piles. The worms cannot get through redwood bark, on account of its soft, spongy nature.

There is great difference between the redwood cut on the coast and that cut inland. The former is called black-hearted redwood, and I doubt whether the worms ever get into it.

Testimony of William H. Davis.

WILLIAM H. DAVIS, being duly sworn, deposed as follows:

I hereby refer to the printed testimony heretofore given by me, and make the same a part hereof.

All the property now owned by the United States, situated at New San Diego, Cal. and upon which the barrack quarters and other buildings owned by the government now stand, was conveyed by me to the United States by deed of gift. It is worth considerable, probably twenty thousand dollars or more. I also conveyed to the United States the franchise of my wharf, for government purposes, free of charge of any description. The Government so used it, for all purposes for which it needed it, for about nine to ten years. I also made a deed of gift to the United States of a wharf site, of about 950 feet in length by 200 feet in width, with a T 275 feet in length by 115 feet in width, lying immediately south of the government buildings, which is equally as valuable as my own. I deem it to be of great prospective value, and it is probably worth to day \$20,000 or more. The deeds are of record.

My reasons for not applying to Congress for relief for the destruction of my property earlier than I did, was on account of my absolute inability to get the evidence necessary to sustain my claim. I sustained heavy losses by the San Francisco fire of 1851. and never was able after that to repair them. I continued to receive a yearly revenue from my wharf until about the commencement of the war; sent me by Eugene and Capt. George Pendleton, my agent at San Diego. He, George Pendleton, informed me of the destruction being made by the United States troops, at the time it was being used by them. I farmed in Alameda County, near San Leandro, after my losses by the fire, and I continued to lose through ill luck and bad crops, until I was ruined and all my property lost under foreclosures of mortgages upon it. The earthquake of 1868 destroyed my house, the only one I then owned, and wrecked all the records that I had from Captain Pendleton, all accounts showing receipts from wharf, and his letters regarding the destruction of the property. In those letters he informed me that he had applied to the officers to prevent the destruction, but they replied they were unable to avoid it, as fuel could not be had. During the war of course I could do nothing, but in 1865 or 1866 I commenced to do all in my power to collect the evidence necessary to lay the claims before the government. The attorneys that I consulted Judge A. M. Crane, General Horace W. Carpenter, and others, told me that a relief bill before Congress was the proper method; and for this reason I never applied through the Quartermaster's Department, which I have lately been informed should have been the channel through which it were best to apply. The witnesses were scattered all over California, the majority of them were five hundred miles from my place of residence, and I have not had, since the close of the war, sufficient funds of my own to defray my expenses to San Diego, where many of the witnesses live; and in every instance where I have been away from my home to procure testimony I have been assisted through the kindness of friends; and not until about eight years ago did I procure sufficient money to place—then only a part—of the evidence that it was necessary to present to the Congressional committees in behalf of my claim.

Eugene Pendleton was my agent in charge of the property from 1851 to about 1860, and thereafter George Pendleton. Neither informed me that any part of the property was knocked down by the steamer Goliath in 1857, or at any other time. I am certain if such had been the case they would have so informed me.

I am still the owner of the site where the wharf stood.

The Arroyo Las Choyas, the Arroyo Nacional, the Arroyo Otay, and the River Tia Juana, all empty into the Bay of San Diego, and of course reduce considerably the saline character of the water, making it less destructive to wood than unadulterated sea water.

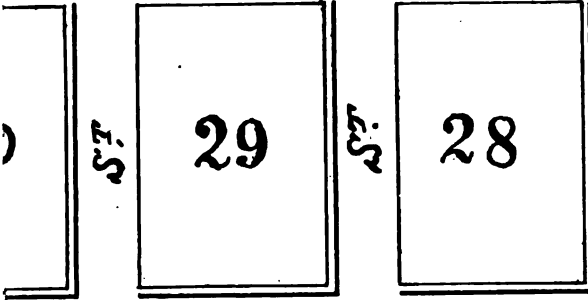
A portion of the piles used in my wharf came from the coast of San Celito Bay, in the harbor of San Francisco; the remainder came from the coast of Mendocino County.

The commission then adjourned *sine die*.

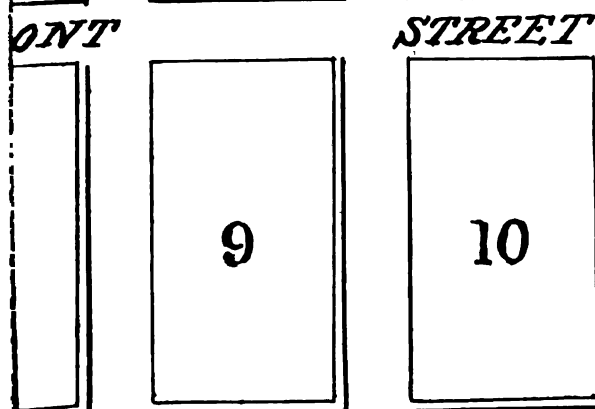
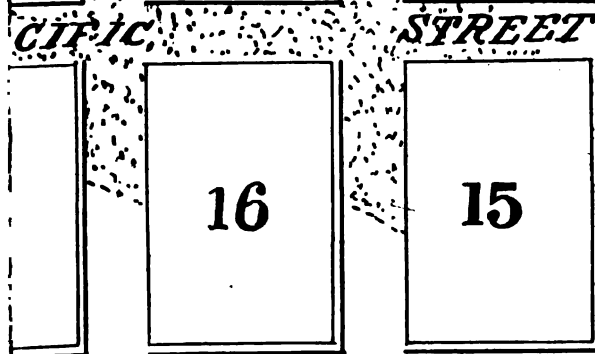
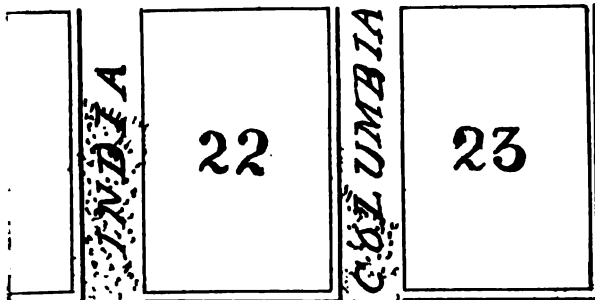
Respectfully submitted.

R. SAXTON,
Deputy Quartermaster-General, United States Army,
Commissioner of Investigation.

STREET



STREET



IN THE MATTER OF THE CLAIM OF WILLIAM H. DAVIS VS. THE UNITED STATES, FOR DESTRUCTION OF HIS WHARF AND WAREHOUSE AT NEW SAN DIEGO, CAL., BY UNITED STATES TROOPS, DURING THE WAR OF THE REBELLION,

Copies of papers marked Exhibits A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W.

EXHIBIT A.

Affidavit of B. T. Catlin.

STATE OF CALIFORNIA,
City and County of San Francisco, ss :

B. T. CATLIN, being duly sworn, deposes and says:

I arrived at the post of San Diego in the last part of October, 1861; was a member of Capt. Thomas L. Roberts's Company C, First Infantry, California Volunteers. Was on duty at the post every day from the date of arrival to March 14, 1862.

I have a thorough knowledge of the condition of the wharf during that time, for which a claim has been made for damages. I was on that wharf nearly every day during my stay at the post. The wharf was in a rotten condition and unfit for landing goods, except in limited quantities, when I first saw it. It was abandoned; part of the outer end was gone. Some time in November, 1861, while four companies of United States troops were embarking in the mail steamer Uncle Sam, a part of the outer end of the wharf fell in. In January, 1862, another portion of the wharf fell, on the disembarkation of Capt. William F. French's company of volunteers from the steamer Senator.

The wharf was repaired by the troops for their own use, by replacing some planks that had been removed from the inner end of the wharf.

The piles of the wharf were so rotten that it was unsafe for teams to venture upon it, even with an empty wagon.

On the 14th of March, when Captain Roberts turned over the post to Captain French, the wharf was in the same condition as when he assumed command, with the exception above stated. The soldiers used no portion of the wharf for fuel or other purposes during all that time.

Firewood was procured before the rainy season commenced from a contractor of the name of Tibbets, from the foothills about twenty miles back of the post. When the roads became impassable the wood was procured, by details of men from the garrison, from a low, sandy spit of land on the south side of the bay, and floated across the bay to the post in a whale-boat and scow. The latter was constructed by the troops for that purpose of lumber obtained from San Francisco by requisition of quartermaster.

During my stay at San Diego there was no warehouse at or near the wharf.

The soldiers could have no motive for destroying the wharf, for, rotten as it was, it was almost indispensable in landing small quantities of stores for their use.

B. T. CATLIN.

Sworn to and subscribed before me this 23d day of May, 1881.

ED. W. HEWITT, [SEAL.]
Notary Public.

EXHIBIT B.

Affidavit of William F. French.

STATE OF CALIFORNIA,
City and County of San Francisco, ss :

WILLIAM F. FRENCH, being duly sworn, deposes and says:

On the 25th of January, 1862, I arrived at the military post of New San Diego, Cal., in command of company D, Fifth Infantry, California Volunteers, and assumed command of said post on the departure of Captain Roberts, First Infantry, California Volunteers, in the month of March following.

My company disembarked on the wharf at New San Diego, said wharf being then a decayed and dilapidated structure, a portion of it breaking down during the landing of my company.

The fuel for use of the troops was at that time procured by detail of soldiers of the

post from an island in the harbor, about two miles distant, and was transported in a scow constructed of lumber procured from San Francisco for the purpose. The fuel for the use of the post continued to be thus supplied during the rainy season, and until the roads became passable for teams, when it was supplied by contractor from the mainland.

To my knowledge no portion of the material of the wharf was ever used by the troops for fuel or any other purpose.

There was no warehouse at the wharf when I arrived, nor subsequently, so long as my stay in San Diego lasted.

About half the wharf nearest the land was sufficiently serviceable for landing small quantities of supplies for the troops, the balance was too rotten to be used for such purpose.

W. F. FRENCH.

Sworn to and subscribed before me this 23d day of May, 1881.

ED. W. HEWITT, [SEAL]
Notary Public.

EXHIBIT C.

Affidavit of P. P. Hoin.

STATE OF CALIFORNIA,

City and County of San Francisco, ss:

P. P. HOIN, being duly sworn, deposes and says:

I arrived in San Diego October 30, 1861, as a member of Company E, First Infantry, California Volunteers, Captain Roberts commanding. Major Haller of the Fourth United States Infantry was in command of the post at that time. Captain Roberts relieved Major Haller in the month of November. Captain French succeeded Roberts in March, 1862.

The rainy season commenced about the 1st of December. Up to that time, the wood for the post was all supplied on contract by G. P. Tibbette. It came from a point about twenty miles northwesterly from the post. There was always an abundant supply of fuel. When the rainy season came on in December, the roads became impassable for teams, and no fuel could be obtained from that source. All the fuel necessary for use at the post was then procured from an island in the harbor, about two miles from the post. The fuel was from a scrubby growth, and roots of the same dug out of the sand with great labor, lugged to the shore, and floated across in boats made by the soldiers from lumber drawn from San Francisco. I was one of the details, alternating with others, engaged in cutting wood, digging the roots, and lugging all to the boats.

During the whole rainy season, say three months, I was, when not on duty on the island, every day on the wharf for which a claim for destruction by soldiers is made, and I know positively, of my own knowledge, that the soldiers committed, at no time, any depredation whatever on the wharf, and that the wharf was in as good condition when I left San Diego, in the month of March, as when I arrived in October.

The wharf was in a rotten, dilapidated state; the planking and stringers on the end of the wharf, to the extent of four or five sections, were gone when I first arrived.

There was no warehouse in connection with the wharf, nor did I hear of one having been there.

There is no foundation for any claim against the government for damages done during my entire stay in San Diego.

The wharf was a dangerous and abandoned piece of property when I arrived, and was patched by the soldiers for their uses in landing supplies, instead of being destroyed.

P. P. HOIN.

Before Craig, 27th January, 1879.

EXHIBIT D.

Affidavit of E. Van Valkenburg.

STATE OF CALIFORNIA,

County of Santa Barbara, ss:

E. VAN VALKENBURG, being duly sworn, deposes and says:

That he is a native-born citizen of the United States, of the age of forty-eight years; that he resides in the city and county of Santa Barbara, State aforesaid; that he has resided in this city and county since the month of February, 1864.

That deponent lived in the county of San Diego, Cal., in the years 1859 to 1864.

That deponent well knew the wharf and warehouse of William H. Davis at New San Diego, Cal., commonly called and known as Davis's wharf and warehouse. That deponent was residing in San Diego, Cal. (Old Town), when said wharf and warehouse were in existence. That they were good, substantial, capacious, and strongly-built structures. That to the best of deponent's knowledge, information, and belief the said wharf and warehouse were well worth the sum of \$60,000.

Deponent further says that the winters of 1861-'62 were unusually wet ones, causing the whole country about there to be flooded, and was in fact the greatest flood he ever saw in this State. The roads were very soft and miry, so much so as to cause the suspension of travel with loaded wagons.

Deponent further says that he was well acquainted and upon intimate relations with Capt. Thomas Roberts, who succeeded Major Haller in the command of the military post of New San Diego. Said Capt. Roberts and his command arrived at said post about the month of October, 1861. That about the month of February, 1862, he was relieved of the command of said post by Capt. William F. French, with whom deponent was also on intimate terms. That deponent almost daily visited said barracks and officers' quarters, and well knew the condition of the troops stationed at said barracks. That the troops so stationed at said barracks were entirely out of firewood; that he, the deponent, personally saw the troops or soldiers tear down said Davis's warehouse, and the lumber thereof carried to the barracks and to the officers' quarters, and there split up and used for fuel. That deponent saw great quantities of plank and timber in and around said barracks and officers' quarters, taken from said Davis's wharf, and used also as firewood. That the destruction of said wharf and warehouse was done during the months of November, and December, 1861, and January, February, and March, of 1862, and by the command of Capt. Thomas Roberts and Capt. William F. French. That during said months it was a subject of very common talk and, in fact, notorious in the community, that the troops stationed at New San Diego, in San Diego County, were consuming the wharf and warehouse at that place, owned by William H. Davis, for fuel for the command there stationed.

Deponent further says that he knows William H. Davis, the claimant in this matter.
EDGAR VAN VALKENBURG.

Sworn and subscribed to before me this 19th day of May, A. D. 1879.

C. A. THOMPSON, [SEAL.]

Notary Public, Santa Barbara County, California.

EXHIBIT E.

STATE OF CALIFORNIA,

City and County of San Francisco, ss :

JAMES P. M. RAINBOW, being duly sworn, deposes and says:

My name is James P. M. Rainbow; age, forty-five; occupation, apiarian.

I was a member of Company E, First Regiment, California Volunteers, Capt. Thomas Roberts. Affiant arrived in San Diego with his company about the month of November, 1861, and left in the month of April, 1862.

Affiant cannot state the value of the property at that time.

To the best of affiant's knowledge and belief the wharf and warehouse were about in the same condition when we left as when we arrived. If any portion of said property was used for any purpose, I knew nothing of it.

That Company I, of Fifth Infantry, California Volunteers, Captain Smith, remained stationed there after we left.

J. P. M. RAINBOW.

Subscribed and sworn to before me this 4th day of June, A. D. 1881.

S. HATLER, [SEAL.]

Clerk Superior Court,

By J. CHAUNCEY HAYES,
Deputy.

EXHIBIT F.

WASHINGTON, D. C., June 8, 1881.

I, Capt. and Bvt. Maj. Francis H. Bates, United States Army, retired, aged fifty-three years, was first lieutenant and captain Fourth United States Infantry, and acting assistant quartermaster at New San Diego Barracks, California, during the

part of the year 1861. My company, I, Fourth Infantry, took post at New San Diego Barracks, California, June 17, 1861. I joined the following July 7, 1861. Company I, Fourth Infantry, composed the only troops stationed at San Diego from June 17, 1861, till November 1, 1861, when one Company, E, of the First Infantry, California Volunteers, arrived at the post, and on the 17th or 18th of the same month Company E, Fourth Infantry, and companies C, F, and I, Sixth Infantry, arrived from Fort Yuma, when on the 23d of November, 1861, all the regular troops, viz: Companies E. and I, Fourth Infantry, and Companies C, F, and I, Sixth Infantry, embarked on the Pacific Mail Steamship Uncle Sam, en route for New York, leaving Capt. Thomas E. Roberts, Company E, First Infantry, California Volunteers, in charge of the post.

According to my quartermaster returns, and so far as my recollection serves me, while I was at San Diego, the regular troops had nothing whatever to do with either the wharf or storehouse referred to in the chief quartermaster's letter of May 18, 1861.

During the whole time that we were stationed at this port, my property returns show that we were in possession of abundant fuel for the use of the officers and enlisted men, and my receipts show that in the property which I turned over to Lieutenant Thompson, First Infantry, California Volunteers, acting assistant quartermaster, in November, 1861, there were upwards of eighteen cords of wood.

During the entire period of time that I was stationed at San Diego, we had no rain to interfere with hauling.

As to the condition of the wharf when we arrived there in June, 1861, so far as my memory serves me, it was in a very dilapidated condition; and the once or twice during our stay there when we had occasion to cross it, to reach the boats which came into the harbor (I think that only two or three came in while we were there), it was considered dangerous for the ladies and children to walk over it by themselves.

So far as my knowledge extends, not a stick of it was used for fuel by any of our command. I do not remember that we ever had any freight landed there; and besides occasionally crossing it the only use that I can recall that was ever made of it was by some soldiers who once in a while perched themselves on some projecting log or beam for the purpose of fishing therefrom.

As to the storehouse, I remember that shortly before we embarked, and about the time of the California Volunteers, a brig from San Francisco, loaded with subsistence stores for the use of the volunteer troops, dropped anchor off the post; and these stores, on being landed, were stored in this warehouse, as the regular troops had not then vacated their quarters and post storehouses.

If any damage resulted to either the wharf or storehouse by reason of their use or abuse by government troops or employés, that did not exist prior to our taking post there in the summer of 1861. It must have occurred subsequent to our embarkation on the 23d of November, 1861, as none, so far as I know, happened while we were stationed there.

In a communication from Col. G. O. Haller, Twenty-third Infantry, I learn that one of the affidavits in support of Mr. Davis's claim comes from a citizen of Old San Diego, who makes the statement that while we, the Fourth Infantry, were stationed there, "It rained continually for a long time and we got out of fuel." (My returns show this to be unqualifiedly false, as we were never without an abundance of fuel); "and that the roads were too bad for hauling, so that we were compelled to use the lumber from the wharf for fuel, and he had seen some of it in Major Haller's stove." I cannot imagine what he was doing in Major Haller's kitchen, for the weather was usually too mild to have a fire elsewhere. I do not know how much fuel the major drew when he first took post there, but I find among my receipts, issued on regular requisition, more than enough to keep this one fire during our whole five months' stay there.

Fuel was also issued regularly for the use of the surgeon, hospital and enlisted men, as shown by my returns and vouchers now in the Third Auditor's Office, and which I recently examined.

As I have before stated, the regular United States troops left New San Diego, Cal. November 23, 1861, and the command of the post was, on that day, turned over to Capt. Thomas E. Roberts, Company E, First Infantry, California Volunteers.

F. H. BATES,
Capt. and Bvt. Maj., U. S. A.

DISTRICT OF COLUMBIA,
City of Washington, ss:

Subscribed and sworn to before me this 9th day of June, A. D. 1881.

H. T. CROSBY, [SEAL.]
Notary Public.

EXHIBIT G.

STATE OF CALIFORNIA,

City and County of San Diego :

Personally appeared before me, a notary public in and for the city and county aforesaid, J. C. Stewart, who being duly sworn according to law, deposes and says as follows:

My age is sixty-eight years; residence, San Diego, Old Town. Am a carpenter. Have resided here since 1837.

I knew the property known as Davis's wharf, and the building on the block next to the barracks, in which Mr. Hooper kept store. The T end of the wharf was never finished. The piles were driven and the stringers put on, but it was never planked. It was not more than two years after the wharf was built before the teredo commenced eating up the piles. I never knew of any new piles having been put in. A few years after the wharf was built the steamer Ohio swung against it and knocked down about 50 or 60 feet of it. The piles broke off when the wharf was knocked down, as they were eaten close down by the teredo.

About the year 1863, Mr. Pendleton, Mr. Davis's agent, gave William Evans half of the wharf for tearing it down and hauling it to Old Town. Before that, I think while Captain French was in command at the barracks, Mr. Pendleton gave me one-half of the building in which Mr. Hooper kept store and which belonged to Mr. Davis, for tearing it down and hauling it to Old Town. I tore the building down myself.

The piles in the T end of the wharf, which was never planked, fell down by the action of the waves, after they had been eaten off by the teredo, and went adrift.

I think the year the steamer Ohio knocked a portion of the wharf down was about 1854 or 1855.

J. C. STEWART.

Sworn to and subscribed before me this 10th day of June, A. D. 1881.

H. H. DOUGHERTY, [SEAL.]

Notary Public.

EXHIBIT H.

STATE OF CALIFORNIA,

County of Santa Barbara, ss :

E. VAN VALKENBURG, being duly sworn, says :

My name is E. Van Valkenburg. I reside in the city of Santa Barbara, Cal. I am fifty-two years of age. I am engaged in the liquor business.

In May, 1879, I made an affidavit in behalf of the claimant, William H. Davis, wherein the facts connected with the destruction of said wharf and warehouse by the United States forces in the winter of 1861 and 1862, are fully set out, and I hereby confirm each and every particular fact set out in said affidavit as being nothing but the truth.

Deponent further says that said warehouse and wharf were in good condition in the fall of 1861, and built of the best redwood piles and eastern planks. That the L or T part of said wharf was all planked and in good condition, as well as the rest of said wharf.

That, in deponent's judgment, and from the information gathered by him while he lived at San Diego, and from the general opinion of competent persons, generally expressed, residing therein, the said warehouse and wharf was at least well worth the sum of \$60,000, and that, in deponent's judgment, the claimant herein is fully entitled to the same.

Deponent further says that prior to the destruction of said warehouse and wharf, in the autumn of 1861, he frequently saw steamers and sailing vessels take and discharge freight at said wharf.

That in April, 1862, after the forces left San Diego, and after the appropriation of said wharf by the United States forces, there remained at the shore end a small portion of the wharf, and in his judgment was worth just so much firewood.

That, at the times herein set forth, he was frequently on said wharf and observed the condition of the same; that it was in good condition.

Deponent further says that the winters of 1861 and 1862 were [an] exceptionally severe ones, and that on account of the heavy rains the roads were impassable; and that said troops could not obtain any wood, and were compelled to use and did use said wharf and warehouse for firewood.

E. VAN VALKENBURG.

Sworn and subscribed to before me on this 14th day of June, 1881.

C. A. THOMPSON, [SEAL.]

Notary Public.

EXHIBIT I.

STATE OF CALIFORNIA,
County of San Diego, ss :

In the matter of the claim of William H. Davis for damages in the destruction of his warehouse and wharf at New San Diego, in the State of California, by the United States forces, in the winter of 1861 and 1862.

PATRICK O'NEILL deposes and says:

That he is a citizen of the United States, and a resident of San Diego; that he is fifty-nine years of age.

That in the month of January, 1857, he arrived at San Diego in a steamer named, to the best of his recollection, the Sea Bird; that said vessel landed her freight and passengers at the Davis wharf; that said wharf was, at that time, in good condition; that in the year 1858, deponent visited the wharf again and found it still in good condition.

Deponent further says that the entire wharf, including the T, was planked and the planking and piles were in good condition.

Deponent further saith that said wharf was large and well constructed, and must have cost a large sum of money.

PATRICK O'NEILL.

Subscribed and sworn to before me this 1st day of July, 1881.

H. H. DOUGHERTY, [SEAL.]
Notary Public.

EXHIBIT J.

In the matter of the claim of William H. Davis against the United States Government, for damages in the destruction of the Davis wharf and warehouse at New San Diego, State of California.

STATE OF CALIFORNIA,
County of San Diego, ss :

HARRIET CONNORS, wife of James W. Connors, now residing with her husband at San Diego, deposes and says: That she is fifty-two years of age; that she has resided in San Diego since A. D. 1850.

That prior to the year 1861 she frequently visited Davis' wharf at New San Diego. It was generally rumored that the wharf cost at least \$60,000.

Deponent was on said wharf in the autumn of 1861, when the United States volunteer troops landed with their baggage on the T; that said baggage was removed by teams from the end of said wharf; that so far as deponent knows, the wharf was at that time in good condition.

That in 1874 deponent made an affidavit in behalf of the aforesaid claim corroborative of her husband's statement, made about the same time, and that she now reaffirms said former affidavit in every particular.

HARRIET CONNORS.

Subscribed and sworn to before me this 1st day of July, 1881.

H. H. DOUGHERTY, [SEAL.]
Notary Public.

EXHIBIT K.

STATE OF CALIFORNIA,
County of San Diego, ss :

In the matter of the claim of William H. Davis against the United States Government, for damages in the destruction of the Davis wharf and warehouse at New San Diego, in the State of California.

GEORGE LYONS, being duly sworn, deposes and says:

That he is a citizen of the United States, and that he is sixty-four years of age. That he has resided in the city of San Diego, continuously, since the year 1848, and for four years of said time was sheriff of said county.

That between the years 1851 and 1861 deponent and one Raymond, of San Francisco, were the owners of a vessel of 75 tons burden, called the Emeline; that during said time

said vessel was employed by us in the fishing and fur trade, and in general freighting business between San Francisco and San Diego. That, when at the port of San Diego, said vessel received and discharged her cargoes at the said wharf, and continued to do so up to and including the autumn of 1861. Deponent further saith that during the ten years extending from 1851 to and including nearly all of 1861, said wharf was in a good condition; that during said period both steamships and sailing vessels discharged thereon and received therefrom their cargoes.

That in the autumn of 1861 deponent saw United States volunteer troops with their baggage disembark upon the T of said wharf, and afterwards deponent saw teams remove therefrom said baggage to the barracks.

Deponent further saith that in the winter of 1861-'62 he saw the United States troops, then stationed at New San Diego, take from said wharf planking and piles belonging thereto, and afterwards saw said planking laid in the floors of the dining-room, cook-house, and other buildings in the barracks yard at New San Diego.

Deponent saith that he was familiar with the wharf and its surroundings from the time of its construction in 1850-'51 to the time of its destruction by United States troops in the winter of 1861-'62.

That he well remembers the character and condition of the piles in said wharf; that they were of redwood, driven about six feet apart. There was no apparent depredation by the teredo, and that said worm does not materially injure redwood. Deponent saith further that he saw a number of said piles split, and that they were sound at the heart and were only slightly affected on the outside. That the T of said wharf was all planked and in as good condition as the rest of said wharf.

Deponent saith that he has never known a storm of sufficient violence to occur in the harbor of San Diego to destroy or seriously injure such a wharf as the Davis wharf.

GEORGE LYONS.

Subscribed and sworn to before me this 1st day of July, 1881.

H. H. DOUGHERTY, [SEAL.]
Notary Public.

EXHIBIT L.

THOMAS WHALEY, being sworn, deposes and says:

That he is a citizen of the United States, aged 57, residing in the city and county of San Diego; that he is engaged in the real estate business, as a member of the firm of Morse, Noell & Whaley.

That he first came to San Diego in October, 1851, on board of a steamer landed at the wharf at New San Diego, known as Davis' wharf, which was a large, good, and substantial wharf, having been recently completed, comparing favorably in size and substantiability with Meiggs' wharf at North Beach, San Francisco. Has heard it stated that the wharf cost \$125,000, which he thinks was an over-estimate. Believe that from the high price of lumber and labor at the time the wharf was built, that said wharf could not have cost less than seventy-five thousand or seventy thousand dollars.

Was engaged in mercantile business in Old Town, San Diego, from time of arrival till about January, 1859. His goods were landed at Davis' wharf, New San Diego, and hauled from there to Old Town.

I was absent from San Diego from about January, 1859, till about October, 1868.

THOS. WHALEY.

Subscribed and sworn to before me this 2d day of July, A. D. 1881.

C. P. NOELL, [SEAL.]
Notary Public.

EXHIBIT M.

In the matter of the claim of Wm. H. Davis against the United States Government, for damages in the destruction of the Davis wharf and warehouse at New San Diego, State of California.

STATE OF CALIFORNIA,
County of Los Angeles, ss:

DANIEL B. KURTZ, being duly sworn, deposes and says:

That he is a native-born citizen of the United States; that he arrived in the State of California in the year 1850, and has resided at and near the town of San Diego since said time; that his occupation at the time of his arrival in California was that

of a mechanic, and engaged principally in building; that during his residence in the said county of San Diego he has held public offices of honor and trust, having represented his district in the State senate, and twice in the lower house, and having held the office of county judge of San Diego County.

That he often saw and visited the wharf and warehouse of Wm. H. Davis, situate at New San Diego, and the whole structure was large and splendidly built, and must have cost a large sum of money.

That affiant further states that he witnessed the construction of the property from its beginning, and had a familiar knowledge of it until its destruction, and believes that with occasional repairs it would have lasted for many years after the period of its destruction.

Affiant further states that he knows personally of its destruction by the United States during the winter of 1861 and '62, and knows that the use made of it by the troops was from military necessity.

That during the fall and winter of 1861 and '62 the heaviest rainfall occurred in San Diego County that has ever been known, and continued so long that the whole country for twenty miles around San Diego was flooded, and the roads rendered impassable for teams or wagons for several months. That during that period the fact was well known throughout the country, of the destruction of the Davis property by the United States troops stationed at New San Diego, and that they were compelled to do so, by reason of the impossibility of procuring fuel and lumber.

That said property was in good repair and in fine business condition, and in condition for all purposes for which it was built, at the time of its destruction, and could not at that time have been worth less than \$70,000. That affiant was on and about the wharf frequently in the autumn of 1861, and well remembers the character and condition of the piles in said wharf. They were of redwood, driven about 6 feet apart. There was no apparent depredation by the teredo, and deponent knows that the said worm does not greatly effect redwood. Deponent saw some of the piles split and they were sound at the heart and but little affected from the outside.

Deponent says that he has never known a storm of sufficient violence to occur in the harbor of San Diego to destroy or seriously injure such a wharf as the Davis wharf, or any other wharf.

That when the Culverwell wharf was built at San Diego, Cal., there were a few redwood piles remaining from the Davis wharf, which were used for the Culverwell wharf, and driven among the pine piles of said Culverwell wharf, and when the deponent saw the Culverwell wharf last—about two years ago—the redwood piles were still standing sound and in good condition, and the pine piles were nearly all eaten or destroyed by the teredo.

Deponent further says that, in his judgment, a redwood pile is equal to three pine piles in durability in the waters of San Diego Bay, and deponent's conclusions are predicated upon his observations of the wharves that were standing at San Diego and the present Horton wharf.

DANIEL B. KURTZ.

Subscribed and sworn to before me this 6th day of July, 1881.

C. W. HUMPHREYS, [SEAL]
Notary Public.

EXHIBIT N.

In the claim of William H. Davis against the United States Government for damages in the destruction of the Davis wharf and warehouse at New San Diego, State of California.

STATE OF CALIFORNIA,
County of Los Angeles, ss :

HENRY MAGEE, deposes and says :

That he is fifty-four years of age; a native born-citizen of the United States; that he is by occupation a farmer; that he resides in Fall Brook District, San Diego County, California.

That he arrived in San Francisco Cal., in the ship Susan Drew, in the year 1847, as First Lieutenant of Company I, First New York Regiment, Col. J. D. Stevenson commander.

That in 1853 he saw the Davis wharf and warehouse. The said wharf was a large structure, built of redwood piles and eastern three-inch plank, and well put together in every respect.

That he, from 1853 to 1858, was frequently on the wharf with a two-horse carriage.

for pleasure, with ladies, and on the arrival of sailing vessels and steamers he visited the wharf with a four-horse team, to load with merchandise, from said vessels, from the T of said wharf as late as the fall of 1861.

That he, in 1854 and 1855, sold to the quartermaster of the military post at New San Diego, one hundred head of mules, and forage, and visited the wharf two or three times a week. That he, in 1857, was familiar with the condition of said wharf, and that it was in good condition for business; received and delivered cargoes to and from steamers and sailing vessels. That he furnished more or less meats and vegetables [to] the vessels that arrived in San Diego harbor, from 1856 to 1859, all of which were delivered to said vessels from the Davis wharf.

Deponent says that a redwood pile is equal to three pine piles in durability in the waters of the bay of San Diego.

Affiant further states that he knows, personally, of its destruction by the United States during the winters of 1861 and 1862, and knows that the use made of it by the troops was from military necessity.

That during the winter of 1861 and '62 the heaviest rainfall occurred in San Diego County that has ever been known; that the whole country for more than twenty miles around San Diego was flooded and roads made impassable for trains or wagons for several months.

That deponent believes that the true market value of said wharf was worth the sum of \$65,000 in the autumn of 1861.

That affiant was on and about the wharf often in the autumn of 1861, and that the T of said wharf was all planked, and well remember the character and condition of the piles in said wharf. They were of redwood. There was no apparent depredation by the teredo, and deponent knows that the said worm does not greatly affect redwood. Deponent saw some of the piles split, at the barracks at New San Diego, and they were sound at the heart and but little affected from the outside.

Deponent says that he has never known a gale of wind of sufficient force to occur in the harbor of San Diego to destroy or seriously injure such a structure as the Davis wharf or any other wharf.

HENRY MAGEE.

Subscribed and sworn to before me this 6th day of July, 1881.

C. W. HUMPHREYS, [SEAL.]
Notary Public.

EXHIBIT O.

In the matter of the claim of Wm. H. Davis for damages against the United States Government in the destruction of the Davis wharf at New San Diego, California.

STATE OF CALIFORNIA,
County of Los Angeles, ss:

GEORGE STONEMAN, being duly sworn, deposes and says:

That he is a retired colonel of the United States Army and a resident of Los Angeles County.

That he, in 1853 and 1854, saw the Davis wharf and landed on said wharf from a steamer each time he visited San Diego, Cal.; that it was a large, capacious, strongly-built wharf; that it must have cost a large sum of money, and it is generally believed that it cost from \$60,000 to \$70,000 (sixty thousand dollars to seventy thousand dollars).

Deponent further says that since 1854 deponent did not visit San Diego until 1870.

GEORGE STONEMAN.

Subscribed and sworn to before me this 8th day of July, A. D., 1881.

J. J. WARREN.
Notary Public.

EXHIBIT P.

In the matter of the claim of William H. Davis for damages against the United States Government in the destruction of the Davis wharf and warehouse at New San Diego, Cal.

STATE OF CALIFORNIA.
County of Los Angeles, ss:

JOHN S. GRIFFIN, being duly sworn, deposes and says:

That he was assistant surgeon United States Army, and that he is a resident of Los Angeles County, and a practising physician therein.

That he saw the Davis wharf at New San Diego, Cal., in the year 1852 or 1853, and that it appeared to be well constructed, strong, and must have cost a large sum of money.

That, to the best of deponent's recollection and belief, the bark "Anita" was discharged of her cargo and landed troops from said vessel at the same time, at said wharf, she being a United States Government transport.

That deponent since 1852 or 1853 has not visited San Diego until 1877.

JOHN S. GRIFFIN.

Subscribed and sworn to before me this 9th day of July, 1881.

W. H. GRAY, [SEAL]
Notary Public, Los Angeles County.

EXHIBIT Q.

In the matter of the claim of Wm. H. Davis against the United States Government for damages in the destruction of the San Diego wharf and warehouse at New San Diego, state of California.

STATE OF CALIFORNIA,
County of Los Angeles, ss:

CHARLES R. JOHNSON, being duly sworn, deposes and says:

That he is fifty years of age; a native-born citizen of the United States; and at present register of the United States land office at Los Angeles, Cal.

That he was at San Diego when the work of building the Davis wharf and warehouse was commenced, and was familiar with the condition of said wharf up to the fall of 1861. That it was a capacious and strongly built structure, made of three-inch eastern planks and good redwood piles. That the piles and planking were, in the fall of 1861, sound and in good condition.

That from an experience and observation of many years he is of the opinion that a redwood pile is equal in durability in the waters of San Diego Bay to three pine piles, and that it is his belief that this is a generally conceded fact.

That in the years 1850 and 1851 affiant was the agent of the Pacific Mail Steamship Company, at San Diego. Subsequently, affiant, having business connections and landed interests in San Diego, made frequent visits to that city, and in the year 1861 was attached as purser to the steamer Santa Cruz, then running between the ports of Mexico and California, stopping at San Diego, and visiting the latter port frequently; and that, from the knowledge of the harbor derived by him from his residence in and frequent visits to the city of San Diego, affiant can state that no storm could have occurred in the harbor of San Diego which could destroy or seriously injure such a wharf as the Davis wharf, or any other wharf; and from the position of said bay, it is the belief of affiant that it is an impossibility that any storm could cause any serious injury to said wharf.

Affiant further states that he was at San Diego, in the steamer Santa Cruz, in the fall of 1861, and that at that time the wharf appeared to him to be sound and in good condition.

Affiant also states that he knows that Wm. H. Davis, the claimant, expended on the construction of said wharf and warehouse from \$70,000 to \$80,000, and that, in his judgment, the value of said wharf and warehouse in the fall of 1861 was not less than \$60,000 or \$70,000.

Affiant further states that after the construction of said wharf he was frequently seen sailing vessels and steamers lying alongside of said wharf, discharging and loading their cargoes at the same; and that, in the fall of 1861, the steamer Santa Cruz discharged and loaded her cargo at the T portion of said wharf, and affiant has seen teams loading and unloading on said wharf at that time.

CHAS. R. JOHNSON.

Subscribed and sworn to before me the 9th day of July, A. D. 1881.

W. H. GRAY,
Notary Public, Los Angeles County.

EXHIBIT R.

STATE OF CALIFORNIA,
County of Los Angeles, ss:

JOHN G. DOWNEY, being first duly sworn, deposes and says:

That he is a citizen of the United States and fifty-four years of age, and was, at one time, governor of the State of California.

Affiant states that in the year 1857, being then collector of the port of San Diego, and *ex officio* disbursing agent of the United States Government and superintendent of light-houses, he visited San Diego, and recollects that his attention was called to a large and then apparently new wharf. That affiant asked who was the owner of said wharf, and was informed that it had been constructed by and was owned by Wm. H. Davis.

Affiant did not examine said wharf critically, as to its probable cost, but remarked at the time that he wished that there was such a wharf at San Pedro, as there was more business and commerce at that port than at San Diego. The said wharf was then in good condition, and appeared to be an expensive structure.

JOHN G. DOWNEY.

Subscribed and sworn to before me this 11th day of July, A. D. 1881.

J. J. WARNER,
Notary Public.

EXHIBIT S.

In the matter of the claim of William H. Davis against the United States Government for damages in the destruction of the Davis wharf and warehouse at New San Diego, State of California.

STATE OF CALIFORNIA,
County of Los Angeles, ss :

CHARLES H. FORBES, being first duly sworn, deposes and says:

That he is forty-six years of age, and a citizen of the United States. That he has been for many years engaged in business as stock-raiser, and also as agent for the property of Col. R. S. Baker and his wife, Doña Arcadia Stearns de Baker, who was the widow of the late Abel Stearns, one of the largest property-holders in the county of Los Angeles. That affiant was also agent for the said Abel Stearns for many years prior to his death.

Affiant states that in the fall of 1860 he visited San Diego, remaining there about ten days. That during his stay in said city, he visited on several occasions the wharf of said William H. Davis, and observed that it was a very large and strongly built structure, and that it was in fine condition.

Affiant further states that he saw two or three vessels lying alongside of said wharf, one of them being a steamer.

Affiant has frequently heard the late Abel Stearns speak of the said Davis' wharf and warehouse, and say that it cost the said Davis a large sum of money, viz, from seventy to eighty thousand dollars.

CHAS. H. FORBES.

Subscribed and sworn to before me this 11th day of July, A. D. 1881.

J. J. WARNER, [SEAL.]
Notary Public.

EXHIBIT T.

In the matter of the claim of William H. Davis, for damages against the United States for the destruction of property by the military forces of the United States, at San Diego, Cal., in 1861-'62.

STATE OF CALIFORNIA,
City and County of San Francisco, ss :

P. P. HOIN, jr., being duly sworn, deposes and says:

I am the same person who heretofore testified in the above-entitled matter, and herewith desire to make a further statement concerning the said testimony given on the 27th day of January, 1879.

That the said affidavit was made at the earnest solicitation of B. T. Catlin, who represented that an infamous swindle was about to be practiced and consummated upon the government, and that it behooved us to prevent it. But I have since learned from Mr. Catlin that his motive in opposing the claim was for the purpose of defeating the Congressional nomination of Hon. H. F. Page, at that time.

I did not draw the affidavit nor did I give the same any serious thought or any close investigation, and signed the documents without proper consideration.

My duties while at San Diego were almost entirely clerical, and I was not detailed to procure firewood for the post.

I do not remember anything concerning the warehouse, and it is possible that one might have been there, but my recollections about the property of the claimant are very vague and indistinct.

I have seen the testimony of many reputable persons concerning the destruction of the property, and cannot account for the wide discrepancy between that and the testimony of myself in any other way than that I, with the vague recollection of the period, was largely mistaken in what was set out in my affidavit.

P. P. HOIN, Jr.

Subscribed and sworn to before me this 12th day of July, A. D. 1881.

F. C. MOREBACH, [SEAL.]
Notary Public.

EXHIBIT U.

In the matter of the claim of Wm. H. Davis against the United States Government for damages in the destruction of the Davis wharf and warehouse at New San Diego, State of California.

STATE OF CALIFORNIA,
County of Los Angeles, ss:

SALISBURY HALEY, being first duly sworn, deposes and says:

That he is sixty years of age, and a citizen of the United States; that he has resided in the State of California since the year 1849, and is now an attorney at law, and a member of the law firm of Eastman, Haley, King & Roberts, residing at and doing business in the city of Los Angeles.

Affiant states that from the year 1851 up to the year 1856, he was commanding a coast steamer plying between the ports of San Francisco and San Diego, making semi-monthly trips, and that on his arrival at the latter port he always brought the steamer alongside the wharf of Wm. H. Davis at New San Diego. That the said wharf was at that time a magnificent and complete structure. That it was a long wharf, extending into the channel some 690 feet, with a long L extending up to the southward from the end of the wharf. That said wharf was built of redwood piles, of very large size, and heavily braced, and covered with 3-inch eastern planks. That there was more material used in the construction of said wharf than is usual in such structures, and that the cost of said wharf, together with the warehouse, was very great, say from sixty to eighty thousand dollars.

Affiant further states that from the year 1856 up to the year 1860, affiant made frequent visits to San Diego on business, and that on such visits he always saw said wharf, and usually landed upon it from the steamers.

Affiant also states that during the periods above named he was always familiar with said wharf and its strength, from using it with steamers, and frequently examined it critically, as to its durability and condition; and from his knowledge of said wharf, derived from such use and from such examination, can say, without hesitation, that the said wharf continued up to the time he last saw it, in the summer of 1860, to be in a good and staunch condition for business purposes.

Affiant also states that he is familiar with the different materials used for piles, in the construction of wharves, and has found as the result of his observations that redwood piles last about five times as long as ordinary pine piles.

Affiant further states that from his knowledge and familiarity with the harbor of San Diego, he can say that no storm could possibly raise any sea or swell which could injure any kind of a wharf in said harbor.

Affiant further states that the value of said wharf at the time he last saw it in 1860, was, in his judgment, about seventy thousand dollars. That said estimate is based upon the fact that at that time it was the only wharf in said harbor, and all vessels arriving at that port discharged and loaded their cargoes at the same, and that is the opinion of affiant, the business of said wharf must have yielded a fair interest on that amount at that time.

Affiant was the brother of Capt. Robert Haley, deceased, who was a master mariner on this coast.

SALISBURY HALEY.

Subscribed and sworn to before me this the 12th day of July, A. D. 1861.

JAMES C. KAYS, [SEAL.]
Notary Public, Los Angeles County, California.

EXHIBIT V.

STATE OF CALIFORNIA,
County of Sacramento, ss :

Personally appeared before me, a notary public in and for the county and State aforesaid, CORNELIUS V. KELLOGG, who, being duly sworn, deposes and says as follows:

That I am forty years of age, am a native-born citizen of the United States, and am at present a resident of Sacramento, State of California.

In the latter part of November, 1861, I went to San Diego, California, as first duty sergeant of Captain Thomas L. Roberts' Company E, First Infantry, California Volunteers, and remained on duty at that post until about the early part of March, 1862.

I knew the property at San Diego known as "Davis' wharf." When I arrived at San Diego the only portion of that wharf remaining was the straight piece from the shore running out west into the bay. That part, I think, was in good condition. There were some piles, I think, uncovered at the bay end of the wharf.

During my stay at San Diego, I never knew of any of the timbers or piles of said wharf taken and used for fuel by the troops at said post. I know positively that no piles were ever taken by the troops during my stay there for fuel. I do not think that any of the piles or timbers could have been so taken without my knowledge.

Fuel for the post was procured from an island in the bay, by details of soldiers sent over for the purpose. It was brought to the post in a whale-boat. The wood so obtained was small brush wood; some of it as large or larger than my wrist.

I remember that the winter of 1861-'62 was exceptionally wet, and that the surrounding county was considerably flooded. I don't know that such floods prevented our getting wood for the post, for we got all the wood we wanted from the island.

I do not remember any warehouse near the wharf, belonging to Mr. Davis, while I was at San Diego.

When I left San Diego the wharf was in as good a condition, with the exception of ordinary wear and tear, as it was when I went to San Diego.

When Major Haller's command left San Diego the steamer which took them away anchored in the bay, and the troops were embarked in boats. I remember this distinctly, as two deserters from my company smuggled themselves on that steamer and went east with the 4th Infantry,

During my stay at San Diego no steamers ever landed at the wharf, but anchored out in the bay.

CORNELIUS V. KELLOGG.

Subscribed and sworn to before me this 10th day of September, A. D. 1881.

ELWOOD BRUNER, [SEAL.]
Notary Public.

EXHIBIT W.

STATE OF CALIFORNIA,
City and County of San Francisco, ss :

B. T. CATLIN, being duly sworn, deposes and says:

Since giving my testimony on September 1, 1881, in thinking over the matter of the disembarkation of Captain French's troops at San Diego, in January, 1862, I recollect that the steps leading to the water's edge near the L, on the inner side of the wharf, broke, and precipitated some of the troops into the water. In my said testimony, it is possible I may have been mistaken as to the portion of the wharf which fell on that day.

B. T. CATLIN.

Sworn to and subscribed before me this 17th day of September, A. D. 1881,

ED. W. HEURTL, [SEAL.]
Notary Public.

ARGUMENT OF CLAIMANT'S ATTORNEY.

In summing up the evidence in the matter herein, we shall not touch upon the loyalty of claimant or the title to the property, as the honorable commission has signified to counsel its entire satisfaction that his loyalty was and is above reproach, and

his title unquestionable. But we take the liberty of calling attention to testimony on file with the Committee of the House of Representatives upon War Claims, given by the following honorable and reputable gentlemen, and which upholds both the merit of the claim as well as claimant's *loyalty*:—

Romualdo Pacheco, ex-governor of California.

Samuel Purdy, ex governor of California.

Peter H. Burnett, 1st civil governor of California.

Hon. S. B. McKee, associate justice supreme court of California.

William Sherman, ex-U. S. assistant treasurer, San Francisco.

Ferdinand Vassault, secretary Cal. Pioneer Society.

Hon. A. J. Bryant, ex-mayor of San Francisco.

General D. W. C. Thompson.

General Horace Carpentier.

Hall McAllister.

Lloyd Tevis.

E. R. Carpentier.

All specific facts provided to be found by the act for relief are subsidiary to two general questions.

1st. Does the evidence sustain claimant's right to recover?

2d. His right to recover established, to what compensation is he entitled?

We maintain that claimant's right to recover is established by such a preponderance of unimpeachable testimony that it would seem worse than injustice to longer defer the payment of the claim.

Seventy-four witnesses testify on behalf of claimant, against *fifteen ostensibly* for the government. We say *ostensibly* because we assert that the testimony develops the motive of the opposition to the payment of the claim, on the part of the chief witness for the government, and which motive we claim was born of a personal enmity to the Hon. Horace F. Page, member of Congress, second Congressional district, California, who introduced the bill for relief.

The evidence shows that the only really *positive* testimony in the case, as to the destruction of the property by the troops, is that given by the claimant's witnesses, unless the testimony of C. V. Kellogg can be claimed as such, and he was at the post only a part of the time.

Several of the witnesses for the claimant were officers of the Army and participated in the destruction, and testify very circumstantially as to having *personally* used the property.

EVIDENCE OF THE DESTRUCTION.

Dr. D. B. HOFFMAN (pp. 25-26) was *post surgeon* 1861-'62, and is now *acting surgeon*, U. S. A. * * * The soldiers used the planks and timbers of the wharf owned by W. H. Davis. * * * Has seen the soldiers tearing up the wood of which the wharf was constructed. * * * *This wood was used in deponent's office in the U. S. hospital for the post.* * * * Used for cooking, making fires, and other purposes, from day to day.

Dr. P. W. RANDLE (pp. 39-42) was *post surgeon* at San Diego, succeeding Hoffman. * * * The command under both officers (Roberts and French) took and used the lumber * * * (spoke to both about it). * * * *"During said time I was under the necessity of and frequently did send my own orderlies and hospital attendants to the Davis wharf for lumber for fuel and other purposes, and they procured the same therefrom and removed it to the hospital and to my quarters, where it was used for cooking, warming, and other necessary purposes, in and about the said hospital and said quarters. I used probably more than other officers, as I had three fire-places in the hospital, besides fire-places in my quarters."* * * * *Troops would take a skiff, go alongside of the piles at the bay end of the wharf, and saw off piles with cross-cut saws.*

Dr. Randle's testimony was impeached by Captain G. C. Smith, but the following reputable gentlemen bear witness to his most honorable and unimpeachable character:

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Hon. John F. Miller, U. S. Senator	82
General James Coey, postmaster San Francisco	82
Hon. L. E. Pratt, ex-State senator and district Judge, and ex-grand master of the grand lodge of F. & A. M., California	81-82
(This witness is now the district attorney elect of the city and county of San Francisco.)	
Hon. Alex. G. Abell, ex-State senator, and twenty-six years secretary of the grand lodge F. & A. M., California, and four years chairman of the State central committee of the Republican party	90-91

MATTHEW SHERMAN (pp. 55-56) was in the Army. * * * Was mustered out in 1865 as R. Q. M. 4th Infantry. Was post Q. M. from November, 1862, to February, 1864. His predecessor, Lieutenant Glasby, had partly finished a guard-house. That guard-house was built from planks from the Davis wharf. * * * *He used some of the wharf material for curbing the well dug for the government.* * * * The men took some of the wharf timber, split it up, and fenced the garden with it. Some of the lumber was around the government building at that time (November, 1862), and only the shore end of the wharf was then standing.

SAMUEL STADDON (pp. 73-76) was second lieutenant of Co. H, 5th Regiment of Infantry, Cal. Volunteers; * * * acted as adjutant during Lieut. Smith's sickness. * * * *From February to April, 1862, about one hundred feet was consumed for fuel and other uses, and only fifty feet of the wharf remained when he left in April, 1862.*

Special attention is hereby called to this witness's testimony. His superior officer and commander of the post—Captain Roberts—threatened to *tear his shoulder-straps from his shoulders if he dared disobey his orders to take the property.*

JAMES W. CONNERS (pp. 22-23). This witness's truthfulness is established by the government's own witnesses. He has resided in San Diego County since 1850. Roads were wholly impassable for loaded wagons that season (1861-2). * * * Lived within 150 yards of the barracks. * * * *Daily occurrence for squads of men of the command to go with axes and cross-cut saws to the wharf and tear off the planking and saw the timbers of the wharf* * * * *burn it in the companies' kitchen and bake-house of the post.* * * * Pens were built of it for keeping swine; platforms, benches, water-tanks, and water troughs were made from it. * * * *used for curbing wells* * * * *burned at the blacksmith's shop in setting tires of wagons of the Q. M. Dept.*

HARRIET CONNERS (pp. 23-24, 115). This witness makes the above evidence a part of her own.

WILLIAM EVANS (pp. 16-17). In the winter of 1861-2 wagons would sink to the hubs. * * * *Impossible to haul firewood from outside of the city-* * * * Wharf was consumed for fuel by the U. S. troops. * * * *Often saw the lumber from the wharf around barracks ready split for firewood.*

LOUIS ROSE (pp. 17-18, 56) has resided in San Diego County since 1850. *Was beef contractor for the post for three years.* * * * *Often there three times a day. Often saw squads of from six to eight of the troops, with axes, cut away planks and piles,* * * * *haul same to barracks for fuel. Wagons could not move to bring wood.*

JOSEPH S. MANNASSEE (pp. 19-20, 59-60), who was grain contractor for post, says it was *impossible to get wood that season.* Has frequently seen squads of command tearing off planking of wharf * * * *haul same to barracks yard.* * * * *Done openly and publicly.*

MARCUS SCHILLER (pp. 20-21) has seen lumber of wharf piled up in barracks yard, split up and burned by the troops. * * * *Heard soldiers boast it made good fires.*

JOSHUA SLOANE (pp. 26-27) was appointed collector of port by President Lincoln, 1861-2. * * * In 1861-2 was greatest flood he ever saw. * * * *Almost daily visited the post.* * * * *Frequently saw squads of soldiers tearing down said wharf and the lumber piled on beach and at barracks.*

JAMES ALEXANDER FORBES (pp. 96-97) is in the department of Spanish archives, U. S. surveyor-general's office, San Francisco. Has seen the soldiers destroying the property. * * * *Fuel was very scarce (winter of 1861-2), and could be seldom had, and then it sold for \$24 per cord. Frequently saw large piles of planking and piles split and lying around the barracks.* * * * *Might have seen soldiers taking planks from wharf, splitting them up, and carrying them to barracks thirty times.*

JOSÉ MARIA ESTUDILLO (p. 67), Mexican custom-house officer at Tia Juana, Mexico, saw some of the wharf at the barracks, and being cut and burned by the troops.

E. VAN VALKENBURG (pp. 108-109, 113-114) lived in San Diego from 1859 to 1864. *Almost daily visited barracks and officers' quarters. Troops entirely out of firewood.* * * * *Personally saw the soldiers tear down the Davis warehouse.* * * * *Saw great quantities of timber (from wharf) around barracks and officers' quarters.* * * * *Destruction was during months of November and December, 1861, and January, February, and March, 1862.*

GEORGE LYONS (pp. 115-116), *sheriff of San Diego County four years.* * * * In winter 1861-2 saw U. S. troops take the planking and piles * * * and place same in dining-rooms, cook-house, and barracks yard.

Hon. DANIEL B. KURTZ (pp. 117-119) has been in State senate and lower house; also county judge of San Diego County. Knows personally of the destruction by the U. S. troops in winter 1861-2, and knows the use made of it by troops was from *military necessity.*

HENRY MAGEE (pp. 119-120) came to California as 1st lieutenant Company I, 1st N. Y. Regiment of Infantry, Colonel J. D. Stevenson, commanding, in 1847. Knows personally of the destruction by the U. S. troops in winter 1861-2. * * * *Was a military necessity.*

P. P. HOIN (pp. 124-155). This witness formerly testified against the claim and says he thinks he is mistaken as to the facts set forth in first affidavit.

Here is the testimony of eighteen witnesses who saw the destruction, and four of them were Federal military officers *who participated in it*. Two of them were contractors for the post and were there almost *daily*, and others have held positions of trust and honor in the State.

THE DESTRUCTION WAS OPEN AND NOTORIOUS, AND A PUBLIC CALAMITY.

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J. J. Warner.....	11-12
Charles P. Noell.....	32, 57
Wm. H. Davis (claimant) was informed by his agent	101-103
Captain Charles Thorn, master mariner	12-13, 46
Captain J. C. Bogert, master mariner	28-29
Captain Robert Haley, master mariner	33-34
E. W. Morse, Director, San Diego Bank	24-25, 56
Hon. James McCoy, ex-State senator	27-28, 66
Hon. W. C. Ferrell, ex-collector of customs, San Diego	31-32
José M. Estudillo, Mexican custom-house officer	13-14
Dr. David Wooster, surgeon 5th Regiment Inf., Cal. Vols.....	94
Captain A. S. Grant, commander of post, and afterwards county clerk, San Diego County.....	15, 33, 35-36, 44
Captain William F. French, commander of post, and witness for the government, " <i>was told the troops destroyed it</i> "	92-93, 106-107
G. P. Tibbetts, who was wood contractor for post before the rains.....	53-54

Here are fourteen witnesses, and all but three have held positions of trust, some Federal, some State, who testify that the destruction by the troops was *common notoriety and a commercial misfortune* to San Diego.

Let us review the evidence for the government. None of the witnesses swear positively it was not done, except C. V. Kellogg, to whom we have referred. Some say they don't believe it was done, for they were there and did not see it; and others, who were there and ought to know, *that it might have been done without their knowledge*. But analyze the whole of the testimony for the government by the side of what each government witness swears to, and there are developed such incongruities and *absolute absurdities* that it renders both them and it ridiculous.

For instance, the extent of the wharf is not questioned, and was as follows:—

Running along the shore.....	450 feet by 50 feet.
Running from shore to L.....	550 feet by 50 feet.
The L or T	225 feet by 140 feet

(DAVIS' petition, pp. 1-2, and map annexed, p. 104.)

J. C. STEUART (pp. 112-113). Steamer "Ohio" knocked down 50 to 60 feet in 1854-5.

ROBERT D. ISRAEL (pp. 70-72). Steamer "Goliath" knocked down 300 feet in 1856-7.

B. T. CATLIN (pp. 83-88). Fifteen feet fell in November or December, 1861, and 20 by 40 feet January 25, 1862.

ISRAEL again says, that steamer "America" also knocked down a portion. Here we have more than 400 feet of the bay end of the wharf gone in January, 1862, and yet Captain G. C. Smith, the government witness, and now an officer of the Army, swears (p. 98) that the whole of the wharf out to the L was sound and the planks firm; thinks carts took their baggage in January, 1862, from the end next to the L, and *knows positively they could be driven that far*. If what the other witnesses say is true, these carts must have been like the "Chariot of the sun," driven through space or on the fogs of the bay!!

O. S. WITHERBY (p. 62-63) says he went from ships to wharf, and *vice versa*, as late as 1858. Steuart and Israel say more than 350 feet was gone before this.

HENRY MACLAGAN (p. 61). *There was a two-story warehouse*. (Catlin says there wasn't. nor any building used as such.) Severe storms injured wharf. (Robert D. Israel says, it didn't.) Don't know the condition of the wharf in 1861. Yet he swears he was there in 1861-2 once or twice a month with mail.

E. A. WALL (pp. 61-62, 63-65), who wanted Davis to buy him off for \$50, remembers the warehouse standing in 1862. [*William Scott Ketchum, captain 6th Infantry, afterwards major 4th Infantry, commanded post in 1858-59-60. See Cullum's Register.*] Wall swears *the wharf was good then. Don't know whether the troops took the wharf*. Freight was landed on the wharf when Captain Grant commanded in November, 1862. *Had a difficulty with Mr. Davis about passage money*.

As to this witness's credibility, W. J. LYONS testifies (pp. 72-73). "Jack" Wall said to him, *if Davis would give him \$40, he would not appear for or against him*. Saw Wall in company with Mr. Crosthwaite. Was then in front of Fairchild's Bank, "Jus,

as they went by me Mr. Crosthwaite said to 'Jack' Wall: 'If they don't give you that money, I'll give in my evidence, and make it damned hot for them.'

Also THOMAS J. HIGGINS (pp. 66-67). Knows E. A. Wall, commonly called "Jack." Wall said to him: Davis ought to pay \$50 for losses by delay in passage in 1848. Didn't know much about Davis' case on the street, but might if called on. *Might put a big spoke in Davis' wheel.* Davis couldn't buy him.

O. S. WITHERBY (pp. 62-63). Lived in San Diego, but don't remember exactly condition of wharf in 1861-2. The severest rainstorm he ever saw was then. Does not know that it did injure the wharf. Went from steamer to wharf, and from wharf to steamer in 1858. Steamers may have continued stopping at wharf in 1861; don't recollect.

PHILIP CROSTHWAITE (see Lyon's testimony, pp. 72-73) was going to make it damned hot for Davis if he didn't pay "Jack" Wall. (pp. 65-65). For two or three years previous to 1864 wharf was in such condition passengers and freight could not be landed upon it. *There was a warehouse.*

ROBERT KELLY (pp. 67-69) knows nothing about the troops using the wharf for fuel. *It might have been done without his knowledge.* Knows nothing of the condition of the wharf in 1861-2; was in the country at the time.

ROBERT D. ISRAEL (pp. 70-72), light-house keeper at San Diego. In 1856-7 steamer "Goliath" knocked down about one hundred yards of it. *I had never been covered with planks* (and yet this witness had resided in San Diego since 1849). Pieceknocked down was as far as the steamer could come up, by putting her bows in the mud. The absurdity of this is too apparent. The copy of the official survey annexed shows there was four fathoms of water one-third of the length of the wharf from the shore. Prior to that time (1856-7) steamer "America" knocked down a portion. *No steamer ever came up after the large piece was knocked down.* Doesn't remember any storm there that could knock down a wharf. Knows nothing of volunteers using wharf for fuel, etc. *They might have used some without his knowledge.*

G. C. SMITH (pp. 76-81) was second lieutenant in Captain French's company, and post adjutant. *"I think no part of the wharf fell at the time we landed"* (in January, 1862). [French and Catlin say it did, but Catlin wants to take it back (p. 128).] *Think a step or two broke.* "When we arrived, the shore end of the wharf out to the L appeared to be in sound condition, and the planks all firm. I think I have seen carts drive out nearly to the L. I know they could have been driven there." (According to the testimony of Stewart and Israel more than three hundred and fifty feet of this part was gone from 1854-5, and 1856-7.) Don't know that a detail was made but once (and yet he was post adjutant) to get wood from the island in the bay. (Catlin says details were made as often as necessary, and it was very often necessary.) The wood was very small, and not of much account as wood. Don't recollect that any of the wharf was used for fuel. *Can't swear it was not so used.* If the soldiers had used any of the wharf timber which was lying around the beach (claimant's witnesses say a good deal was piled there), should have given it no thought. *"It might have been used without my knowledge."* This witness swears he would believe about a dozen of the claimant's witnesses under oath, who all swear that they personally saw the destruction, and some participated in it—*impeaching himself!*

B. T. CATLIN (pp. 83-88, 105-106, 128). This witness is the originator of the entire opposition to the claim, having written to nearly every witness for the government, soliciting their testimony. He has, since the closing of the case, personally informed counsel in the case of these facts, and used almost verbatim language to this effect: "I am responsible for the whole thing (meaning the opposition). I have been fighting Page eight years. I think your case a strong one. Your testimony is ten times stronger than it was before. You will win your case. I am sorry I ever had anything to do with it, but I started in to fight Page, and I had to protect myself after having sworn. I believe from the testimony of your witnesses that the property was taken after I left (in February or March), and I should think there was no doubt about that. I honestly hope the government will pay Mr. Davis. I wrote the bitterest article in the *Chronicle* against Mr. Page. I got Captain French and others to testify." He has made a similar statement to others. Particular attention is called to the following portion of his testimony before the Commission:—

Troops didn't even fish out rotten fragments for fuel. No warehouse there, and on building which was used for that purpose. Details to procure wood from peninsula made as often as necessary—*very often necessary.* 15 feet fell when Major Haller embarked, 20 x 40 feet when Captain French disembarked. Recollect the articles written in *San Francisco Chronicle*. I furnished information to a reporter of the *Chronicle* for some of the articles. Was in Waite's Naval Office. Think the majority of the *Chronicle's* articles were directed against Hon. H. F. Page. Some of the articles bitterly denounced Mr. Page. Don't know that the object of the articles was not to defeat Mr. Page's renomination. Think the articles stated it was Mr. Page's purpose to get this claim through to get the "sineus of war" to conduct his canvass. Common report was that Waite and Page were very unfriendly.

(On page 128 this witness takes back part of his testimony.)

Supposes it was considered that Mr. Waite went to Placerville to assist the *Chronicle* in its fight against Page. The articles for which he furnished information were both directed against Page.

Question. "Did you ever state to W. Ford Thomas, deputy collector [at San Francisco], or William F. Swasey, that your motive in opposing this claim was the defeat of the renomination of Hon. H. F. Page, or words to that effect?"

Answer. "*I decline to answer.*"

As to this point we refer to the testimony of—

	Page.
W. Ford Thomas, deputy collector at S. F.	94
Edward F. White, coiner, U. S. mint at S. F.	94-96
William F. Swasey	90
P. P. Hoin	124-125

The last witness first testified against the claim, and now says he was mistaken, and that Catlin told him it was for the purpose of *defeating Mr. Page's nomination*.

E. G. WAITE (pp. 88-89). Catlin and French were clerks in his office at that time (*Chronicle* fight against Page). *Has not the slightest knowledge of this claim.* Was subpoenaed by the *Chronicle* parties in the Placerville trial. *At the time he testified he was not a warm friend of Mr. Page.*

WILLIAM F. FRENCH (p. 93). * * * Thinks the wharf was left standing out to the L when he arrived (25th January, 1862), and *but little of the L.* The first affidavit ever given by this witness was in behalf of claimant, and distinctly says *he was told the troops had used the wharf* before he arrived (January 23, 1862).

J. P. M. RAINBOW (pp. 109-110). If any portion of said property was used by the troops for any purpose *he knew nothing of it.*

J. C. STEWART (pp. 112-113). This witness offers no testimony as to the destruction by the troops.

C. V. KELLOGG (pp. 126-127). This is the only witness for the government that states *positively* that the troops did not destroy the property, and yet he was at the post but *a part of the time.*

Major F. H. BATES (pp. 110-112). Command of post turned over to Captain Thomas Roberts November 23, 1861. If any damage resulted to either the wharf or storehouse by reason of their use or abuse by government troops or employes, that did not exist prior to his taking post there in the summer of 1861, it must have occurred subsequent to his embarkation, 23d November, 1861, *as none, so far as he knows,* happened while he was stationed there. Major Bates states he turned over eighteen cords of wood when he left. This would last only a few days, there being six companies there.

Some of these witnesses testify that the property was in a dilapidated condition; but the whole testimony is very nearly *barren of any contradiction of the direct testimony* of claimant's witnesses, who positively swear to personally witnessing the destruction, *four of the latter being Army officers who participated in it.*

CONDITION OF PROPERTY AT THE TIME OF DESTRUCTION.

WILLIAM H. DAVIS (p. 102). "I continued to receive a quarter-yearly revenue from my wharf until about the commencement of the war, sent me by Eugene and Captain George Pendleton, my agents at San Diego" (p. 4), "affording a net average profit of \$150.00 in U. S. gold coin per month."

J. S. MANASSE (pp. 19-20, 59-60). It was a very fine structure, built of the best materials, and in very substantial manner, and, in his opinion, would have stood till the present time (1874), with occasional repairs. *Remembers the warehouse.*

MARCUS SCHILLER (pp. 58-59). "I think the condition of the wharf in the winter of 1861 was good, and that the piles were good. *I drove on the wharf frequently, even up to shortly before its destruction by the troops.*"

JOSÉ M. ESTUDILLO, custom house officer, Tia Juana (pp. 13-14). Said wharf and warehouses were well constructed and substantial, and remained in good condition until 1861.

E. W. MORSE, pp. (24-25) was familiar with the wharf. * * * Was residing there (San Diego) when said wharf was built; it was a fine, capacious, and strongly-built structure, built of redwood piles and eastern plank. * * * The existence of the wharf was a great convenience and benefit to the people of San Diego, *and its destruction seriously felt and regretted, and was a public calamity.* (P. 56.) "I saw some of the wharf timbers lying at the wood-pile at the barracks in the winter of 1861-2."

Dr. D. B. HOFFMAN (p. 57), acting surgeon, U. S. A. * * * "Davis' wharf was used constantly for landing passengers and freight, before its destruction by troops. I judge it was then suitable for such purposes, for the reason that I went on the wharf frequently when steamers arrived and departed."

JAMES W. CONNORS (pp. 57-58) thinks the condition of the piles was generally good.

Some of them were worm-eaten, worse towards the end of the wharf than near the shore. Before the destruction of the wharf, repairs had been made to it by putting in bracing in some places. In 1861, steamers and sailing vessels discharged their cargoes therefrom.

JOSHUA SLOANE (pp. 26-27), collector of port under President Lincoln, * * * was familiar with the wharf and warehouse. * * * Wharf was a capacious and strongly-built structure, and remained in good condition until it was demolished in the year 1861 by the U. S. troops stationed at New San Diego barracks. * * * He considered the action of the troops an outrage. * * * destroying of said wharf made a deep impression upon his mind; at the time he was the owner of property in the said city of San Diego, and he then considered the wharf a very great benefit to his property, and its destruction as affecting its value greatly, and it seemed to him a public calamity.

Captain J. C. BOGERT, master mariner (pp. 28-29). From 1853 to 1863 was agent for the Pacific Mail Steamship Company at San Diego. Said wharf was a well-built structure, and in the fall of 1861 the said wharf was in good condition, and steamships and sailing vessels landed at it. * * * It was very common talk among the people of Old San Diego of the disgraceful manner in which the said wharf was being destroyed.

ROBERT HALEY (pp. 33-34) was master mariner. Affiant commanded several steamships during nine years, commencing with the year 1851 and ending with the year 1860, with which steamships he frequently, and always when at San Diego, touched at said Davis' wharf and landed and discharged cargo, and loaded and received passengers thereat. Affiant has seen lying at said wharf, at one time, two steamships, one sailing ship, one barque, the quartermaster's brig Patterson, and the cutter Frolic. Affiant was at San Diego in September, 1860, in command of the steamship Santa Cruz, and then again in the fall of 1861, as a passenger, and upon both these occasions the wharf was in good condition for the transaction of business, and for ships to discharge and take in cargo thereat.

G. P. TIBBETS, (pp. 53-54) was wood contractor for post to July 12, 1861. Was in San Diego in October or November, 1861. Saw the property at that time. Walked upon the wharf. * * * Was in good repair and condition in October, 1861. It was a strong and finely-built structure. All freight by sea was landed at that time over the wharf.

JAMES ALEXANDER FORBES (pp. 96-97) is in department Spanish archives, U. S. Surveyor-General's Office, San Francisco. Saw the property when it was in prime order in 1858, and passed over same 1859. Again 1860, and again in July, 1861. * * * At this last period was on the wharf very often. It was then in good business condition. * * * With occasional repairs, believe it would be in existence to-day.

E. VAN VALKENBURG (pp. 113-114). * * * In the autumn of 1861 he frequently saw steamers and sailing vessels take and discharge freight at said wharf. At the times herein set forth he was frequently on said wharf and observed condition of same; it was in good condition (1861).

PATRICK O'NEIL (pp. 114-115). In January, 1857, arrived at San Diego in steamer Sea Bird. Said vessel landed freight and passengers at the Davis wharf. In 1858 visited it; it was in good condition.

HARRIET CONNERS (p. 115). (Lived 150 yards from barracks in 1861.) On wharf, in autumn of 1861, when U. S. volunteer troops landed with baggage on the T; * * * baggage removed by teams from end of wharf.

GEORGE LYONS (pp. 115-116). (Resided in San Diego since 1848. Four years sheriff of San Diego County.) He and one Raymond, of San Francisco, were owners of the Eveline, seventy-five tons burden. Said vessel received and discharged cargoes at said wharf up to autumn of 1861. Nearly all of 1861 wharf was in good condition. Well remembers character and condition of piles in said wharf. No apparent depredation by teredo. Said worm does not materially injure redwood. Saw a number of said piles split, sound at the heart, * * * only slightly affected from outside.

THOMAS WHALEY (p. 117). Engaged in mercantile business at San Diego till about January, 1859. His goods were landed at Davis' wharf.

Hon. DANIEL B. KURTZ (pp. 117-119). Resided near San Diego since 1850. Has been in State senate, twice in lower house, and county judge of San Diego county. Wharf was in good condition from 1851 to and including nearly all of 1861. Remembers character and condition of piles. No apparent depredation by teredo. Saw piles split, sound at heart, slightly affected from outside.

HENRY MAGEE (pp. 119-120), (1st lieutenant, company I, Colonel J. D. Stevenson's regiment, 1847,) in 1853 was on wharf frequently with two-horse carriage with ladies on arrival of vessels. Visited wharf with four-horse team, to load with merchandise from vessels, from the T of said wharf as late as the fall of 1861. On and about wharf often in autumn 1861; well remembers the character and condition of piles. No apparent depredation by teredo. Knows the worm does not greatly affect redwood. Saw some of piles split at barracks sound at heart, but little affected from outside.

CHARLES R. JOHNSON (pp. 121-122). Occupation, register of U. S. Land Office, Los Angeles, Cal. Was at San Diego on steamer "Santa Cruz" in fall 1861. Wharf

appeared to be sound and in good condition. In fall, 1861, steamer "Santa Cruz" discharged and loaded her cargo at the *T* portion. Saw teams loading and unloading on the wharf at that time.

Hon. JOHN G. DOWNEY (p. 123), ex-Governor of California. In 1857 collector of port of San Pedro. Ex-officio U. S. disbursing agent and superintendent of light-houses. Visited San Diego, and recollects his attention was called to a *large and then apparently new wharf*; remarked at time he "wished that there was such a wharf at San Pedro." Wharf *was then* in good condition, and appeared to be an expensive structure.

CHAS. H. FORBES (pp. 123-124), agent for many years of one of the largest and most valuable ranches in California. In fall of 1860 visited San Diego, remaining there about ten days. Visited wharf on several occasions (at that time). It was a very large and strongly-built structure, and it was in fine condition.

Captain SALISBURY HALEY (pp. 125-126) was a master mariner, now practicing law at Los Angeles with the firm of Eastman, Haley, King & Roberts. From 1856 to 1860 made frequent visits to San Diego. Always saw said wharf, and landed upon it from steamers. During the periods above named always familiar with said wharf and its *strength*, from using with steamers, and *frequently examined it critically* as to its durability and condition. * * * Can say *without hesitation* that wharf continued, up to summer of 1860, to be in a *good and staunch condition for business purposes*.

DURABILITY OF REDWOOD PILES.

The piles of the Davis wharf were all redwood, and cut from near the coast. (See testimony of Davis, Culverwell, and many others.) Great difference between coast redwood piles and inland redwood.

FERDINAND VASSAULT (p. 48). Secretary of California Pioneer Society. Knows that redwood piles have stood in the bay of San Francisco for 22 years. Built "Pacific wharf" in 1851-2, and a large majority of the piles were standing in 1874, and *many are standing to-day* and are sound. The piles were not coppered, and had no material upon them for preservation.

N. S. CULVERWELL (pp. 34-35, 42-44, 92-99). Occupation, contractor and wharf-builder. Used a few of the old piles of the Davis wharf in the construction of his wharf at San Diego (1869). *His wharf was about one-eighth of a mile from Davis'*. Saw them six years ago; they were then in good condition, and *not worm-eaten*. Is sure redwood piles will not be attacked by worms—or at least never knew them to be.

A. E. HORTON (pp. 51-53). Knows that the *redwood piles last about three times as long as pine piles*. Has some standing in his wharf at San Diego Bay, not far from site of Davis' wharf, and *they have been standing for over twelve years*.

JOHN P. SHELTON (p. 90-101), wharf-builder and pile-driver on this coast for 30 years, and has had an extensive experience in pile-driving and building wharves. Is intimately acquainted with the kind of piles used on this coast, and well knows the durability of all kinds of piles. There is no comparison between the durability of redwood as against pine piles; the redwood generally last a lifetime, and he is *inclined to think they are indestructible either by the action of the water, or any worm or insect known in the waters of the Pacific coast*. Considerable difference between redwood piles from the coast and inland redwood; first a great deal harder. Removed redwood piles within the last two months that have stood since 1854, where the torredo abounds, and they were perfectly sound. Pacific Mail Steamship Company's wharf at Benicia built in 1851-2; redwood piles sound at this date, pine piles destroyed. Built 400 feet of sea-wall at San Francisco for State harbor commissioners in the last three years. *Has never yet seen a redwood pile that has ever been rendered unfit for use by any insect of any description in the waters of the Pacific coast*.

Ex-Mayor A. J. BRYANT (p. 51) testifies to this witness' skill, integrity, and honesty.

E. C. BOOBAR (p. 101). Has lived in California 32 years. * * * Has been a wharf-builder and pile-driver for 26 years. * * * Has done nearly all the United States Government wharf work here, and a good deal for the State harbor commissioners. * * * Has known redwood piles to last for *twenty years*.

Extended a wharf at Santa Cruz 14 years ago, of redwood piles; they are there yet, and in good order. * * * The piles were cut at the wrong time of the year, and the bark came off of nearly all of them. The bark is a great protection, especially to redwood piles. The worms cannot get through redwood bark on account of its soft, spongy nature. * * * There is a great difference between redwood cut on the coast and that cut inland; the former is called black-hearted redwood, and he doubts whether worms ever get into it.

The second proposition—to what compensation is claimant entitled—is established by the following testimony:

VALUE AT THE TIME OF DESTRUCTION.

One of the chief elements in establishing value of property of this character is the revenue derived from it, and upon this point see the following testimony :

REVENUE.

WILLIAM H. DAVIS (p. 4). Received a *net average profit* per month of \$150, in U. S. gold coin, up to its destruction. (Also see testimony on p. 10.)

S. S. CULVERWELL (p. 35). This witness constructed a wharf *half the size of Davis' wharf* at San Diego, distant 250 yards from Davis' wharf, in 1869, and many witnesses state Davis' wharf would have lasted for many years after its destruction, with occasional repairs. From 1869-'72 receipts of said wharf averaged fully the sum of \$1,100 per month. Would not have built his wharf if Davis' wharf had been standing.

A. S. GRANT (pp. 35-36). Commander of post in November, 1862, and for three years after. Was agent for Culverwell from fall of 1869 to May, 1870. At last date himself and partners leased Culverwell's wharf, for which they paid a monthly rental of \$450. In May, 1871, again rented wharf at monthly rental of \$650. His receipts averaged \$1,100 per month.

VALUE.

Witnesses who saw the wharf swear it was in good and stanch condition in the fall of 1861.

S. S. CULVERWELL (pp. 42-44). Has been engaged in business of contractor and wharf-builder since 1849 (in California). This witness gives the minutest details of the construction of the Davis wharf, which he knows from personal examination, and says it could not have cost less than \$76,619.15.

His own wharf cost \$30,000 and was half the size of the Davis wharf, and he would have given \$60,000 for the latter, had it been standing. Placed a few of the redwood piles of the Davis wharf in his, and they were standing six years ago.

He knows that the Davis wharf, in 1861-2, *was then well worth the sum of \$60,000.*

A. E. HORTON (pp. 51-53). This witness is the founder of New San Diego, and was large land proprietor there.

Constructed a wharf at San Diego in 1869 *half the size of Davis' wharf*. Wharf and warehouse cost \$45,000—*now in excellent repair*. Some of Davis' piles are standing now imbedded in the sands of the beach. Has long known S. S. Culverwell. Has an intimate knowledge of his skill and ability as builder and contractor, and *utmost confidence in his integrity and judgment*. Has carefully read his testimony; * * * from his personal knowledge of prices, etc., Davis' wharf and warehouse *could not have cost less than \$76,619.15*. Would have given \$60,000 for it, had it been in existence at the time he constructed his wharf.

JOHN P. SHELTON (pp. 50-51, 99-101). Occupation contractor, pile-driver, and lumber dealer in California since 1852. Has built 4,600 feet of sea-wall at San Francisco for State harbor commissioners.

Knows S. S. Culverwell for more than twenty years, and has long known his skill and ability in his business. Has read his estimates (of Davis' wharf); they are correct and true, and wharf could not have cost less than the sum therein set forth (\$76,619.15).

A. J. BRYANT (p. 51), ex-Mayor of San Francisco, testifies to Sheldon's skill and ability, and of his construction of wharves on the city front under his administration.

O. C. WHEELER (p. 49), General baggage agent of the Central Pacific Railroad Company. Lodged in Davis' warehouse in 1851. Was told by Mr. Hooper, the agent of the claimant, that the wharf, warehouse, and other improvements that the claimant had made in San Diego, must have involved an expenditure of about \$250,000.

BERNARD PEYTON (pp. 46-50), superintendent of California Powder Company at Santa Cruz, Cal. Was Mr. Davis' agent in 1851, and a long time previous thereto. Mr. Davis was in receipt of rents of about \$5,000 per month. These sums were all applied to the building of his property at San Diego. Mr. Davis also sold large and valuable properties at this time; proceeds went to San Diego. This continued for a year.

G. P. TIBBETTS (p. 54). Was wood contractor for post in 1861. Wharf was in good repair and condition in October, 1861. Was well worth \$60,000 at that time.

PHILIP CROSTHWAITTE (p. 65—government witness). It was commonly reported at the time that the wharf was built it cost Mr. Davis \$60,000.

E. VAN VALKENBURG (p. 108). Lived in San Diego from 1859 to 1864. Knew the wharf and warehouse of William H. Davis. * * * Were good, substantial, capacious, and strongly-built structures. (P. 113) To the best of deponent's knowledge and belief, the said wharf and warehouse were well worth the sum of \$60,000. (In 1861-2.)

HARRIET CONNERS (p. 115). It was generally rumored that the wharf cost \$60,000.

THOMAS WHALEY (p. 117). Has heard it stated that the wharf cost \$125,000, which he thinks was an over-estimate. Believes it could not have cost less than \$70,000 to \$75,000.

HON. DANIEL B. KURTZ (p. 118). The whole structure was large and splendidly built, and must have cost a large sum of money. In autumn of 1861 in good repair and fine business condition, and *could not have been worth less than \$70,000.*

HENRY MAGEE (p. 120). Believes the true market value of said wharf was the sum of \$65,000 in the autumn of 1861.

General GEORGE STONEMAN (pp. 120-121), retired colonel of the U. S. Army, resident at Los Angeles, Cal. Was a large, capacious, and strongly-built wharf, and must have cost a large sum of money; generally believed it cost from \$60,000 to \$70,000.

CHAS. R. JOHNSON (pp. 121-122), Register of the United States Land Office at Los Angeles, Cal. Knows William H. Davis expended on the construction of said wharf and warehouse from \$70,000 to \$80,000. In his judgment, value in fall of 1861 was not less than \$60,000 to \$70,000.

DR. JOHN S. GRIFFIN (p. 121) was assistant surgeon, U. S. Army. It appeared to be well constructed and strong, and must have cost a large sum of money.

Captain SALISBURY HALEY (pp. 125-126). Cost of said wharf and warehouse was very great, say from \$60,000 to \$80,000. Was in good and staunch condition in the summer of 1860.

JAMES ALEXANDER FORBES (p. 96), in department archives, U. S. Surveyor-General's Office, San Francisco. Believes, and does not hesitate to state, that when he saw the property in July, 1861, it could not have been worth less than from \$60,000 to \$70,000.

DR. D. B. HOFFMAN (pp. 26, 57). Wharf must have cost a large sum of money. It was suitable for landing passengers and freight before its destruction by the troops.

Hon. W. C. FERRELL (p. 31) understood from common report that it cost \$60,000, * * * it could not have cost less.

ROBERT HALEY (pp. 33-34). It was well piled, braced, capped, and planked, and was very substantially constructed, and must have cost not less than \$60,000. In fall of 1861 was in good condition for transaction of business, and for ships to discharge and take cargo thereat.

E. W. MORSE (p. 24), director of Bank of San Diego, verily believes the cost was \$60,000.

C. P. NOELL (p. 32). In his judgment it could not have cost less than \$60,000.

PATRICK O'NEILL (p. 114). In good condition in 1858. Must have cost a large sum of money.

J. J. WARREN (p. 12). Must have cost a large sum of money.

LOUIS ROSE (p. 18). Could not have cost less than \$60,000.

DR. P. W. RANDLE (p. 41), post surgeon at San Diego, 1861-2. It was very large, cost probably from \$80,000 to \$100,000; could not be replaced for a less sum.

Captain CHARLES THORN (p. 13). Must have cost a large sum.

We submit that, upon the evidence adduced herein, a court of justice would be compelled to give claimant judgment for full amount of damages.

Seventy-four witnesses testify on behalf of claimant. *Eighteen* testify positively to personally witnessing the destruction; *fourteen* swear that the destruction was open and notorious, and was a public calamity; *twenty-three*, that the property was in excellent repair up to the autumn of 1861; and *thirty* testify that the value at the time of destruction ranged from \$60,000 to \$100,000.

We acknowledge that a court of justice would not take into consideration the number of witnesses, provided there existed reasons to doubt their truthfulness. But the character of these witnesses is above reproach and unimpeachable. Many have occupied, and some at present occupy, public positions of honor and trust—some Federal, military and civil, some State and county; others were public characters, and not one is an obscure person. There is only one variance in their evidence, and that is not material. Some speak of the L of the wharf, others of the T; but this is easily explained by reference to that part of the structure, as shown by the official plat annexed.

It is right—as well as a gracious act on the part of the commission—to consider the relations of claimant to the government other than his loyalty. He conveyed to the government (see claimant's testimony and map) by deed of gift the land upon which the government buildings stand at New San Diego, worth probably \$20,000; also a wharf-site 970 feet long by 200 wide, with a T 275 feet by 115 feet, worth about \$20,000; and the franchise of his own wharf up to its destruction. One witness, who was a commissary in General Fremont's battalion in 1846, swears to claimant's generous support of the government at that time, in turning over a cargo of general merchandise to General Fremont at Santa Barbara at a most critical period in the conquest of California—the battalion being entirely out of quartermaster's and commissary stores, ragged and foot-sore—taking simply the word of the commander that he would be compensated.

The facts brought out in the case show that the origin of the opposition was through

the witness Catlin; that his object was not to injure the claimant, but arose from personal enmity to Hon. H. F. Page, who introduced the bill. The facts show that he earnestly solicited the testimony of nearly every witness for the government, two of whom testify for the claimant. He acknowledges that he had fought Page for eight years, and, after having sworn, wanted to protect himself. The testimony of Captain French utterly destroys itself. He swears he was told that the troops destroyed the property, and Catlin now says he believes it was destroyed during French's command. Captain Smith says: "I cannot swear it was not done;" again, "it might have been done without my knowledge." Other witnesses of the government swear that more than half of the property was gone in 1857, and yet these officers testify they landed upon that very portion in January 1862.

There is eminently a reasonable view to be taken concerning the accuracy of the memory of the witnesses pro and con. The presumptions are all in favor of the correctness of the memory of the *resident witnesses*, concerning the facts of the destruction, who testify even as to minute details. They lived there then, and are living there now; and it is to be presumed that their recollection of facts happening about their homes is more accurate than that of parties temporarily stopping there.

The rains that season were unparalleled in the history of the country, and the roads were impassable for nearly four months. Wood in San Diego sold at \$24 per cord, and could be seldom had at that price. All the witnesses, both for the claimant and the government, except Catlin, say that the wood from the peninsula was almost valueless as fuel, that it was greasewood, and only the roots could be used; and Captain Smith, the government's witness, who was post adjutant for eleven months, and whose business it was to make details to procure that wood, says, "Don't know that a detail (for that purpose) was made more than once." We contend that these resident witnesses who were cognizant of all these facts, and swear positively to them, are entitled to the fullest belief; for the circumstances were vividly impressed upon their minds by the decrease in value of their real estate and the commercial misfortune and expense to the citizens of San Diego, which they testify was the result of the destruction. Again, it is a natural thing for soldiers to destroy, especially when their needs are pressing; and this is particularly applicable to volunteer troops. They seem actuated, when engaged in war, by the persuasion that, holding their lives in their hands and being in ever-recurring danger, fighting for the honor and preservation of their country, there is, if not an irresponsibility for their acts, an extraordinary leniency to be placed upon them.

It appears from the testimony that a large part of the property was destroyed during the command of Captain French; and scarcely any other inference can be drawn from his own evidence than that he did use the property and seeks to avoid official responsibility.

There is no charge that the destruction was wanton, but that a pressing military necessity existed; and we confidently assert that had Mr. Davis been present at the destruction, his known patriotism would have first considered the welfare of the troops, and he would have waited for his government to compensate him. One instance in his career (mentioned above) has proven this.

Now as to his compensation, it certainly should not be less than \$60,000, and ought to be much more. None of the evidence places the value of the property, when destroyed, at less than that sum, and the preponderance of the evidence is above \$70,000. A structure like it could not have been replaced for a less sum. In November, 1862, not more than fifty feet was left; and out of this, Captain Matthew Sherman says, gardens were fenced, wells curbed, water tanks built, and a guard-house at the barracks constructed from it. The structure was unquestionably destroyed, its identity as a wharf obliterated, and what little was left was good only for so much fuel.

We claim further, that, when the great expense to which claimant has been subjected in procuring testimony to establish his claim is considered, and which we hold is legitimate damage, there can be no objection urged to his claim for legal interest upon the claim when allowed.

J. B. METCALF,
Attorney for Claimant.

HEADQUARTERS MILITARY DIVISION PACIFIC AND DEPARTMENT CALIFORNIA,
OFFICE CHIEF QUARTERMASTER,
Presidio of San Francisco, Cal., May 18, 1881.

DEAR SIR: I have been requested by the War Department to examine and report upon the merits of the claim of Mr. W. H. Davis, formerly of San Diego, Cal., against the United States for the destruction of his warehouse and wharf at San Diego by the United States forces in the winter of 1861 and spring of 1862. Mr. Davis alleges

H. Ex. 9—6

that the winter of 1861 was an exceptionally severe one, and that on account of the heavy rains the roads were impassible; that the troops stationed at San Diego had no fuel, and could not obtain any, otherwise than by using his warehouse and wharf; and that these structures were entirely destroyed, and the materials used by the troops for lumber and fuel. He claims damages against the United States for the said loss of his property to the amount of \$60,000.

I will thank you to give me any information you may possess bearing on this case, particularly the condition and value of said wharf and warehouse at the close of the autumn of 1861, before the troops commenced to use it; also its condition and value after the troops left it in the spring of 1862, and what damage, if any, Mr. Davis is entitled to for the destruction of his property. Please state your name, age, occupation, and the opportunity you have had for forming an opinion in the case. I desire this information in the form of an affidavit, for the expense of which affidavit please forward bill to me.

Yours, respectfully,

RUFUS SAXTON,
Deputy Quartermaster-General, U. S. A.

HEADQUARTERS FORT DODGE, KANS.,
May 25, 1881.

COLONEL: Your letter of the 18th instant, referring to a wharf and warehouse in San Diego, Cal., which, it is alleged, were destroyed by United States forces stationed there, is received. As Brvt. Maj. Francis H. Bates, retired, was the first lieutenant of my company (1, Fourth Infantry), and acting assistant quartermaster at New San Diego, while we were stationed there, and as his duties would naturally make him more familiar with the condition of any property there made use of by United States troops, I have taken the liberty to inclose your letter to me to his address, in Georgetown, D. C., and have requested him to advise you of his recollections. No doubt they will be more perfect than mine. My command at Fort Mojave, Ariz., was ordered, in May 1861, to Los Angeles, Cal., but on the march a courier met us with orders for my company to proceed from Coco Mongo Ranch to San Diego, and there relieve Captain Armistead's company, Sixth Infantry. We arrived at New San Diego in June 1861, and in November, 1861, sailed for New York City. The post returns of New San Diego, and my monthly returns of 1 company, Fourth Infantry, will give the precise dates.

At the time of leaving California, the command of New San Diego was turned over to a captain commanding an infantry company of California volunteers, whose name I think was Thompson. The United States barracks were located in New San Diego, about three miles below the old town, on the south side of the bay. But the new town literally deserted by those inhabitants who had erected or owned the numerous buildings on lots around the military station. There was an enormous, I might call it a *gigantic*, wharf leading out from the shore to deep water at New San Diego, in a dilapidated condition, but could still be used, and, if my memory is correct, was used by my company when we embarked on the P. M. S. S. Company's steamer for New York, via Panama. We left this wharf in the condition we found it, being very little, if any, changed by storm or tide, or wear or tear. There might have been a warehouse, or building used as such formerly, as there were many vacant buildings there at that time. But the town property and the wharf were apparently abandoned. No demand I think was ever made for wharfage. Permit me to suggest a careful examination of the assessment and tax-rolls of San Diego County for the years 1859, '60, '61 and '62, which will throw much light upon the value of and the ownership of the property in New San Diego, during the time preceding and subsequent to our service there, particularly, whether the owners considered the property worth the payment of the annual taxes. The great quantity of lumber required, and the price of it at San Diego at the time, to construct such a wharf with a warehouse, together with the cost of labor in constructing, leaves no doubt in my mind but that the original cost thereof amounted to \$60,000 gold coin, or nearly that amount.

There is a personal matter connected with this claim of Mr. Davis, which I will add, as it may also throw light on one or more depositions made in the case. While residing in Washington Territory, I received from a former resident of Port Townsend, then living in San Francisco, a letter inclosing a copy of a deposition made by a resident in Old San Diego, I think Manassus, or some such name, which, in effect, stated that the rainfall there, had been so great that the garrison supplies of wood gave out, and could not be hauled for bad roads, and my command were compelled to use the wharf lumber for fuel, and that he had seen fire in my own stove made of this lumber. I was requested to furnish a deposition of similar import. In answer, I could only say that so much of that deposition was without foundation, and I gave facts to contradict the

SAN DIEGO CAL
CHIEF ENGINEER'S OFFICE
CALIFORNIA SOUTHERN R.R.
JOS. O. OSGOOD CHIEF ENGINEER
1881.

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deposition; when the matter passed out of my mind, until very recently (say two years ago), I found a San Francisco newspaper had charged me with giving such a deposition, and actually used my own facts in proof of my perjury. I thereupon wrote to the honorable Secretary of War, Mr. McCrary, advising him if there was such a deposition, with my name attached to it, that it was a forgery, as I had never made a deposition on that subject. Indeed if such a deposition should be presented, reference to Lieutenant Bates' final return, showing amount of cord-wood on hand and turned over will, I believe, refute it.

Very respectfully,

GRANVILLE O. HALLER,
Colonel Twenty-third Infantry.

Lient. Col. RUFUS SAXTON,

Deputy Quartermaster-General United States Army, Presidio, San Francisco, Cal.

CALIFORNIA SOUTHERN RAILROAD COMPANY,
San Diego, Cal., June 13, 1881.

DEAR SIR: In reply to your inquiries concerning the attacks of the teredo upon wharf piles in San Diego Bay, I would say that I have not yet been able to obtain trustworthy information as to the comparative resistance offered by different kinds of wood.

The few pieces of redwood exposed alongside of pine here are eaten by these worms, but not quite so badly as the pine, perhaps two-thirds as much. The only wood used for piles to any considerable extent is pine. Piles of this material and of about 12 inches diameter were driven in a wharf at National City in 1872, and at the beginning of this year at least 90 per cent. of them had been eaten in two. All the stumps have been sawed off, at mud, this season, and I inclose a sketch showing one of these piles as it appeared when brought to the surface.

There is no question in my mind that the bark is a perfect protection from the worms as long as it remains intact as fragments of the above piles, which retained the bark, were eaten along the edges of the bark only, and not through the sound bark in any place. The teredo does very little damage here, but very few piles in the bay showing evidence of its work. The teredo bores a hole one-fourth to three-eighths of an inch in diameter, but the worm which does the most mischief, makes a hole about one sixteenth of an inch in diameter; I do not know the name of this borer. The only creature found in the wood, and the one which apparently does the work, resembles very much a shrimp in appearance, and is generally from one-fourth to one half an inch in length. As will be seen by the sketches, its work extends to the mud, but it is apparently most destructive between high and low water.

I am informed that piles of pine timber, cut in the summer, required to be renewed in the third year, and that winter-cut piles, with the bark on, last from four to five years.

The life of the pile has been lengthened a year or two, in some instances, by painting the portion between the tides with a mixture of asphaltum and coal tar, once in six months. This stops the ravages of the worm when they are usually most destructive. Unprotected by the bark or other covering, the piles show evidence of the entrance of the worm almost immediately after being driven, certainly within a few months.

Yours very truly,

ROBT H. FLETCHER,

First Lieutenant Twenty-first Infantry, U. S. A.

JOS. OLLSGOOD.

SAN DIEGO, CAL., June 15, 1881.

MY DEAR GENERAL: I inclose you Mr. Osgood's report which I have just received, hoping it will be of service. Regretting that I lost the opportunity of seeing you once again before your departure, I trust that you will not hesitate to avail yourself of any further assistance which it may lie in my power to afford you.

Yours, very respectfully,

ROBT. H. FLETCHER,
First Lieutenant Twenty-first Infantry.

[Pratt & Metcalfe, Attorneys and Counselors at Law. L. E. Pratt, J. B. Metcalfe, Rooms 20, 21, 22, Real Estate Association Building, No. 230 Montgomery street.]

SAN FRANCISCO, *September, 2, 1881.*

SIR: As attorneys for Mr. Wm. H. Davis, we have the honor to ask that you authorize General Rufus Saxton, deputy quartermaster-general, to furnish us with a copy of the testimony recorded by him in the matter of the claim of Wm. H. Davis re United States, for destruction of his property at San Diego, Cal., in the winter of 1861 '62, by the military forces of the United States.

We desire this that we may have it printed, in order that when the matter is laid before the Congressional committee, printed copies can be given them. The expense will be borne by us.

We have the honor to be, very respectfully, yours,

PRATT & METCALFE.

The Hon. the SECRETARY OF WAR,
Washington, D. C.

[Pratt & Metcalfe, Attorneys and Counselors at Law. L. E. Pratt, J. B. Metcalfe.]

SAN FRANCISCO, *September 2, 1881.*

DEAR SIR: I herewith inclose an application to the Hon. Secretary of War for permission to print the testimony in the Davis claim. If you will kindly indorse the same and have it forwarded we will be very much obliged.

Very respectfully,

J. B. METCALFE.

General RUFUS SAXTON,
Presidio, Cal.

[First indorsement.]

CHIEF QUARTERMASTER'S OFFICE.
MILITARY DIVISION PACIFIC, AND DEPARTMENT OF CALIFORNIA.,
Presidio of San Francisco, Cal., September 3, 1881.

Respectfully forwarded to the Quartermaster-General of the Army, Washington, D. C.

I have no objection to the granting of this request.

R. SAXTON,
Deputy Quartermaster-General, Chief Quartermaster.

[Second indorsement.]

WAR DEPARTMENT,
QUARTERMASTER-GENERAL'S OFFICE.
Washington, D. C., September 13, 1881.

Respectfully forwarded to the Hon. the Secretary of War.

M. C. MEIGS.
Quartermaster-General, Bt. Maj. Genl., U. S. A.

SAN FRANCISCO, *October 7, 1881.*

DEAR SIR: Since thinking more deliberately over the facts that have come to my knowledge, during the examination of the claim of W. H. Davis, I have thought that possibly my evidence in the case might work an injustice to the claimant. As my sole motive in taking any action in the matter was to see justice done, and being desirous that both Mr. Davis and the government shall receive exact justice, I think it but right to make the following statement:

From evidence that I have seen, and from conversations had with officers and others who were in San Diego, and claim to be cognizant of the facts in the case, the conviction has been forced upon me that at some period other than the time covered by my affidavit damage was done to Mr. Davis' property by the troops stationed at San Diego, though at what time I am unable to say. The positive character of the evidence, and the unimpeachable character of witnesses, leave no room for doubt, and as I wish to wrong no man my sense of justice compels me to say this much in favor of Mr. Davis.

The discrepancies between my own evidence and that of others, may be reconciled by taking into account the differences in the minds of different persons in regard to the recollection of dates.

Yours, &c.,

B. T. CATLIN.

General RUFUS SAXTON.

SAN FRANCISCO, CAL.,
October 18, 1881.

SIR: We have the honor to acknowledge the receipt of a communication, dated the 3d instant, from the chief clerk of the War Department, informing us that, in view of the law in the case, it is not deemed advisable to furnish us with a copy of the testimony taken by General Rufus Saxton, deputy quartermaster-general, in the matter of the claim of William H. Davis *vs.* the United States. We think this refusal of our request must have been directed under some misapprehension of the nature of the cause at issue. The law required the investigation to be made under the direction of the War Department. You referred the matter to the Quartermaster's Department for investigation, and the Quartermaster-General referred the same to General Saxton for the investigation required by the act.

Our client, Mr. Davis, was peculiarly embarrassed, and had not the means to pay large expenses. Therefore, to avoid entailing upon him the expense of a stenographer (whom we had the right to employ) to report the testimony in full, we considered that a copy furnished us by General Saxton would answer our purpose and save the great expense of a stenographer.

The sessions of the commission of investigation, held by General Saxton, have always been conducted openly, and there has been nothing to conceal, and we could even have employed a clerk to take down the testimony, as General Saxton's clerk has done.

Under the authority of General Saxton, his clerk has already made a copy of the testimony and had printed copies made for us, but it is retained in his clerk's hands, by order of General Saxton, until the order is received from you for delivery to us.

General Saxton saw no impropriety in furnishing us a copy of the testimony, and in his indorsement to you he stated that he had no objection but was not fully satisfied that he had authority to furnish it, and therefore advised that we ask you to authorize him to give it.

The question is asked, how is it possible for us to properly present the case under such circumstances?

We have always courted the fullest investigation of our case and ask this privilege now that it may be more thoroughly understood.

We may here remark, that when General Saxton received the reference of the case to him for investigation, he had not a scrap of paper to commence work upon; we furnished him all the testimony which had heretofore been given in the case, and all testimony *pro* and *con*, had been collected since.

During the progress of the investigation, we have furnished him with original affidavits of parties whose oral testimony he could not procure, and we retained no copies of such papers trusting to the firm belief that we could get a complete copy of the same when the investigation should be concluded.

We are under pecuniary obligations to the printers and to one of General Saxton's clerks for the work done, but we cannot get the results of such labor until you give General Saxton authority to furnish it to us.

We indulge in the hope that upon this explanation, you will give the desired authority.

Respectfully, your obedient servants,

PRATT & METCALFE,
230 Montgomery street, San Francisco, Cal.

HON. ROBT. T. LINCOLN,
Secretary of War.

[Indorsements.]

Knowing the within statement to be true, I have the honor to respectfully request that a favorable answer be sent to the attorneys by telegraph at their expense.

Very respectfully,

R. PACHECO.
pr. W.

QUARTERMASTER-GENERAL'S OFFICE,
Washington, D. C., October 29, 1881.

Respectfully returned to the honorable Secretary of War, inclosing letter from Messrs. Pratt and Metcalfe of September 2, 1881, requesting to be furnished with copies of testimony in the claim of Wm. H. Davis *vs.* United States, with action of this office endorsed thereon. A press copy of letter of the War Department denying the request, with reasons therefor, is also inclosed.

M. C. MEIGS,
Quartermaster-General, Bvt. Maj. Genl., U. S. A.

OFFICE ASSISTANT QUARTERMASTER,
Post Lowell, Ariz., November 1, 1881.

GENERAL: I have the honor to report that in compliance with Special Order No. 143, Headquarters Military Division of Pacific and Department of California, dated August 25, 1881, I proceeded to Tubac, Ariz., on the 27th ultimo and returned on the 29th ultimo.

I inclose letters (1) to the Assistant Adjutant-General, Department of Arizona and (2) to the post commander, Post Lowell, showing cause of delay in accomplishing the duty; and (3 and 4) affidavits of Paschall Magry and John Baker in regard to wharf at San Diego.

I saw the man Henry Glassman, referred to in my letter dated July 6, 1881, who informs me that he did not join Captain French's company until after it had arrived at Drum Barracks from San Diego.

Very respectfully, your obedient servant,

G. C. SMITH,
Captain and Assistant Quartermaster U. S. Army.

[Indorsement.]

WASHINGTON, D. C., November 25, 1881.

Respectfully forwarded to the Quartermaster-General U. S. A., for file with my report of investigation of the claim of W. H. Davis, of Oakland, Cal., *vs.* the United States. It was sent too late to be embodied in my report. This, I think, completes the papers in the case.

R. SAXTON,
Deputy Quartermaster-General.

Personally appeared before me Capt. G. C. Smith, an Assistant Quartermaster in the United States Army, one Paschall Magry of the town of Tubac, county of Pima and Territory of Arizona, who, being duly sworn according to law, deposes and says, that during the month of January (1862) A. D. one thousand eight hundred and sixty-two, he was a member of Capt. Wm. French's Company D, Fifth Infantry, California Volunteers; that he went to San Diego, Cal., with said company and was stationed at New San Diego Barracks for a period of about ten months, that when he went there, there was an old wharf situate to the westward of, and near the building in which the troops were quartered; that said wharf was at the time in a very dilapidated condition, and that a part of it during the time he was there fell down from natural decay and was carried out to sea by the tide. That during his stay at San Diego, neither the wharf nor any part of it was destroyed by the United States troops. That a quantity of wood was on hand in the Quartermaster's corral, and corded up, when he went to the post, or barracks, of San Diego, and which wood was used (by the officer and troops) for culinary and warming purposes; that moreover a quantity of wood for the use of the garrison was cut on the peninsula or island near San Diego during the time, and boated over to the troops for their use; that from his own knowledge he does not believe that during the time he was stationed in San Diego any destruction of wharf, or any other property, was made by the troops that could cause anything like a claim against the United States, or any other party.

his
PASCHALL X MAYRY.
mark

Witness: FRANK TOMPKINS.

Witness: SABINO OTERO.

Subscribed and sworn to before me this 28th day of October, 1881.

G. C. SMITH,
Captain and Assistant Quartermaster, U. S. A.

I certify that Par. 1031, R. A. R., 1863, has been complied with.

G. C. SMITH,
Captain and Assistant Quartermaster, U. S. A.

Personally appeared before me, the undersigned authority, one John Baker, of the county of Pima and Territory of Arizona, who, being duly sworn according to law, deposes and says: That during the month of January, A. D. one thousand eight hundred and sixty-two (1862), he was a member of Capt. Wm. French's Company D, Fifth Infantry, California Volunteers; that he went to San Diego, Cal., with said company

and was stationed at New San Diego Barracks for a period of about ten months; that when he went there, there was an old wharf situate to the westward of and near the building in which the troops were quartered; that said wharf was at the time in a very dilapidated condition and a part of it, during the war there, fell down from natural decay and was carried out to sea by the tide; that during his stay at San Diego neither the wharf nor any part of it was destroyed by the United States troops; that a quantity of wood was on hand in the Quartermaster's corral, and corded up, when he went to the post, or barracks of San Diego, and which wood was used by the officers and troops for culinary and warming purposes; that moreover a quantity of wood for the use of the garrison was cut on the peninsula or island near San Diego and boated over to the troops for their use; that while engaged fishing he was afraid that the whole structure would fall from pure rottenness and decay, the piles being badly eaten.

Further from his own knowledge, he does not believe that during the time he was stationed in San Diego, any destruction of wharf or any other property was made by the troops that could cause anything like a claim against the United States, or any other party.

JOHN BAKER.

Sworn to and subscribed before me this 1st day of November, 1881.

R. F. AMES,
Second Lieutenant Eighth Infantry, Post Adjutant.

I certify that Par. 1031, R. A. R., 1863, has been complied with.

G. C. SMITH,
Captain and Assistant Quartermaster, U. S. Army.

OFFICE ASSISTANT QUARTERMASTER,
Fort Powell, Ariz., September 23, 1881.

SIR: I have the honor to report that under Paragraph 2, Special Order No. 143, dated Headquarters M. D. P. and D. of C., August 25, 1881. I was directed on my arrival in Tucson, to proceed to Tubac, to comply with instructions received.

Arriving in Tucson on the 6th instant, I personally communicated these instructions to the department commander, and he directed that in view of the complications existing, my journey to Tubac be postponed.

The above quoted order, being still in force, and as circumstances will permit me to comply with it, at any time after the 1st proximo, I would request further instructions in the premises.

Very respectfully, your obedient servant,

G. C. SMITH,
Captain and Assistant Quartermaster, U. S. Army

The ACTING ASSISTANT ADJUTANT-GENERAL,
Headquarters, Department of Oregon, in the field, Camp Thomas, A. T.

(First indorsement.)

HEADQUARTERS DEPARTMENT OF ARIZONA,
In the field, Camp Thomas, A. T., September 25, 1881.

Respectfully referred to the Chief Quartermaster of the Department, who will, if Captain Smith can be spared after the 1st proximo, notify him to comply with the instructions he has already received.

A. K. ARNOLD,
Major Sixth Cavalry, A. A. A. General.

(Second indorsement.)

WILCOX, A. T., September 23, 1881.

Respectfully forwarded to Capt. G. C. Smith, A. Q. M., U. S. A., Fort Powell, A. T. (through commanding officer), who will please comply with the instructions he has already received.

HENRY C. HODGES,
Department Quartermaster-General, U. S. A., Chief Quartermaster.

(Third indorsement.)

FORT POWELL, A. T., September 29, 1881.

Respectfully transmitted to Capt. G. C. Smith, A. Q. M., U. S. A.

G. M. BRAYTON,
Captain Eighth Infantry, Commanding Post.

OFFICE POST QUARTERMASTER,
Fort Powell, A. T., October 8, 1881.

SIR: I have the honor to request an escort of three men, to accompany me to Tubac and return, under Special Order No. 143, Headquarters Military Division of the Pacific, dated Presidio of San Francisco, Cal., August 25, 1881.

The recent Indian outbreak, and rumors of depredations by Indians on the Magdalena road in Sonora, I think, justify me in making this request.

Very respectfully, your obedient servant,

C. G. SMITH.
Captain and Assistant Quartermaster, U. S. Army.

[First indorsement.]

FORT POWELL, A. T., October 8, 1881.

Respectfully returned to Capt. G. C. Smith, Assistant Quartermaster, U. S. A.

The small number of men at this post are all required for general duty over Indian prisoners recently sent here by the department commander, and none can, at present, be spared to perform the escort duty required.

I would advise that Captain Smith defer his trip to Tubac until the Indian troubles are settled.

G. M. BRAYTON,
Captain Eighth Infantry, Commanding Post.

HDQRRS. MIL. DIV. OF THE PACIFIC AND DEPARTMENT OF CALIFORNIA.
OFFICE CHIEF QUARTERMASTER,
Presidio of San Francisco, July 5, 1881.

GENERAL: In connection with my investigation of the claim of William H. Davis *vs.* The United States for alleged destruction of wharf at New San Diego, Cal., in 1861-'62, by troops, I find it desirable to get certain information which it is possible may be obtained from the records in your office. It is claimed by Mr. Davis that the destruction occurred in the fall of 1861 and winter of 1861-'62, when Major D. O. Haller, Fourth United States Infantry, Capt. Thomas Roberts, First California Infantry, and Capt. Wm. F. French, Fifth California Infantry, were successively in command.

As near as I am able to determine, Lieut. F. H. Bates, Fourth Infantry, was quartermaster under Major Haller; Lieut. John S. Hunter, First California Infantry, was quartermaster under Captain Roberts; and Lieut. G. C. Smith, Fifth California Infantry (now a quartermaster, U. S. A.), was quartermaster under Captain French. The evidence also tends to show that some destruction of the wharf may have occurred during the time Capt. A. S. Grant, Fourth California Infantry, was in command. His quartermaster was Lieut. Matthew Sherman.

I have the honor to request that the money and property accounts of Lieutenants Bates, Hunter, Smith, and Sherman, which are presumed to be on file in your office, or are accessible to you, be examined to determine—

1st. The kind and quality of fuel purchased by each of them while on duty at New San Diego, Cal., the price paid, from whom purchased, whether or not under contract, and the particular date of each purchase.

2d. Whether any of said returns show the receipt of any lumber from San Francisco, Cal., and from which a scow or boat was manufactured, for the purpose of transporting wood across the bay from adjacent islands, as this is alleged in some of the testimony taken.

3d. Whether or not any fuel of any kind was purchased of one George A. Pendleton: and, if so, the date, kind, and quantity.

If any other officer was on duty as quartermaster at San Diego during the period mentioned I request his returns may also be examined.

Very respectfully,

R. SAXTON,
Deputy Quartermaster-General, Chief Quartermaster.

The QUARTERMASTER-GENERAL,
Washington, D. C.

[[First Indorsement.]]

WAR DEPARTMENT, QUARTERMASTER-GENERAL'S OFFICE,
Washington, D. C., July 14, 1881.

Respectfully referred by direction of the Quartermaster-General to the Third Auditor of the Treasury, with request that this office be furnished with information

called for in within letter of Lieut. Col. Rufus Saxton, Deputy Quartermaster-General United States Army, for consideration in connection with claim in favor of Wm. H. Davis, of Oakland, California.

JAMES M. MOORE,
Quartermaster, U. S. A.

HDQRS. MIL. DIV. OF THE PACIFIC AND DEPARTMENT OF CALIFORNIA.
OFFICE CHIEF QUARTERMASTER,
Presidio San Francisco, Cal., September 3, 1881.

GENERAL: In connection with my investigation of the claim of William H. Davis vs. The United States for alleged destruction of wharf at New San Diego, Cal., in 1861-'62, by troops, I find it desirable to get certain information, which it is possible may be obtained from the records in your office.

It is claimed by Mr. Davis that the destruction occurred in the fall of 1861 and winter of 1861-'62, when Maj. D. O. Haller, Fourth United States Infantry, Capt. Thomas Roberts, First California Infantry, and Capt. Wm. F. French, Fifth California Infantry, were successively in command.

I have been informed that First Lieut. Milton L. Glasby, of Capt. Wm. F. French's Company, Fifth California Infantry, and First Lieut. W. A. Thompson, of Capt. Thomas Roberts's Company, First California Infantry, acted as Acting Assistant Quartermasters at some time from October, 1861, to March, 1862, at New San Diego, Cal.

I have the honor to request that the money and property accounts of Lieutenants Glasby and Thompson, above referred to, which are presumed to be on file in your office, or are accessible to you, be examined to determine:

1st. The kind and quantity of fuel purchased by each of them while on duty at New San Diego, Cal., the price paid, from whom purchased, whether or not under contract, and the particular date of each purchase.

2d. Whether any of said returns show the receipt of any lumber from San Francisco, Cal., from which a scow or boat was manufactured, for the purpose of transporting wood across the bay from adjacent islands, as this is alleged in some of the testimony taken.

3d. Whether or not any fuel of any kind was purchased of one Geo. A. Pendleton; and, if so, the date, kind, and quantity.

If any other officer was on duty as quartermaster at San Diego than those referred to in my letter of July 5, 1881, and herein, during the period mentioned, I request his returns may also be examined.

Very respectfully, your obedient servant,

R. SAXTON,
Deputy Quartermaster-General, Chief Quartermaster.

The QUARTERMASTER-GENERAL,
Washington, D. C.

[First indorsement.]

WAR DEPARTMENT,
QUARTERMASTER-GENERAL'S OFFICE,
Washington D. C., September 12, 1881.

Respectfully referred by direction of the Quartermaster-General to the Third Auditor of the Treasury, in connection with letter of Colonel Saxton referred July 14, 1881, with the request that an additional examination be made of the money accounts and property returns of the within-named officers, and of the officers who relieved them, and whom they relieved, and if any other officers who were on duty at San Diego, Cal., during the time mentioned as shown by the records of the Treasury Department, with a view of obtaining any information they may furnish on the point suggested by Col. Saxton.

An early reply is requested.

JAS M. MOORE,
Quartermaster, U. S. A.

[Second indorsement.]

QUARTERMASTER-GENERAL'S OFFICE,
Washington, D. C., October 29, 1881.

By direction of the Quartermaster-General, respectfully returned to Colonel Rufus Saxton, Deputy Quartermaster-General, Presidio, San Francisco, Cal., and attention invited to inclosed report from the Third Auditor of the Treasury, in case of the claim of William H. Davis, for alleged destruction of a wharf at San Diego, Cal.

JAS. M. MOORE,
Quartermaster, U. S. A.

TREASURY DEPARTMENT, THIRD AUDITOR'S OFFICE.

Washington, D. C., October 1, 1881.

SIR: In answer to inquiries in letters from General R. Saxton, Deputy Quartermaster-General and Chief Quartermaster Military Division of the Pacific, in case of the claim of William H. Davis for alleged destruction of wharf at New San Diego, Cal., dated July 5 and September 3, 1881, respectively, and your indorsements thereon of July 14 and September 12, 1881, herewith returned, I have to state that an examination of the property returns and money accounts of the officers named on file in this office for the period named show that purchases of fuel were made at New San Diego, Cal., as follows:

July 1, 1861. From Crosthwait & Anderson, 17 cords and 4 feet wood.....	\$350 00
Aug. 8, 1861. From G. P. Tibbetts, 10 cords wood.....	47 50
Sept. 1 to 27, 1861. From G. P. Tibbetts, 17 cords and 6 feet wood.....	84 31
Oct. 31, 1861. From G. P. Tibbetts, 20 cords wood.....	95 00
All purchased by Lieut F. H. Bates, Fourth Infantry, A. A. Q. M.	

The following purchases were made by Lieut W. A. Thompson, First California Infantry, A. A. Q. M.:

Jan. 31, 1862. From G. P. Tibbetts, 23 cords wood.....	\$109 25
Dec. 18, 1861. This officer received from Capt. R. W. Kirkham, quartermaster at San Francisco, Cal., 5,700 feet lumber, and expended, per abstract L, January, 1862, as follows: "325 feet for building a boat to haul wood across the bay from the island."	

The following purchases were made by Lieut. Milton L. Glasby, Fifth California Infantry, A. A. Q. M.

Mar. 31, 1862. From G. P. Tibbetts, 43 cords wood.....	\$204 25
June 6, 1862. From G. P. Tibbetts, 20 cords wood.....	95 00
June 30, 1862. From G. P. Tibbetts, 16 cords wood.....	76 00
Sept. 20, 1862. From Wm. Evans, 50 cords wood.....	200 00

No other purchases of fuel of any kind appear to have been made by any of the officers named from July 1, 1861, to September 30, 1862, at this station, and the purchases were made from Geo. A. Pendleton.

The property returns or vouchers upon which payments were made do not disclose whether or not the purchases were made under contract.

Respectfully,

E. W. KEIGHTLEY,
Auditor.

Per J. M. V.

The QUARTERMASTER-GENERAL,
Washington, D. C.

PHILADELPHIA, PA., November, 22, 1881.

GENERAL: The inclosed letter from the Third Auditor of the Treasury, in reply to your reference of my letters of July 5 and September 12, 1881 (also inclosed), are respectfully forwarded for file with my report of the investigation I made of the claim of W. H. Davis, of Oakland, Cal., vs. the United States. This letter was not received by me until some days after I had submitted my report.

While the information furnished by the Third Auditor does not reconcile the conflicting testimony in this remarkable case, it has a bearing upon it. It shows that no wood was purchased at San Diego from October 31, 1861, to January 31, 1862, and that lumber was furnished from San Francisco to build a boat to haul wood across the bay.

That in July, 1861, the contract price of wood purchased from Crosswait & Anderson was \$20 per cord.

2d. That all the wood purchased from August 8, 1861, to June 30, 1862, was on vouchers made out in favor of G. P. Tibbits. Tibbits about that time was Crosswait's business partner and is now postmaster at Santa Barbara, Cal. The price paid to Tibbits was \$4.50 per cord. It is noticeable that Tibbits, in whose name these vouchers were made out, was not in San Diego from October, 1861, to March, 30, 1862. He also swears that he delivered no wood at San Diego after July 12, 1861. If his testimony can be relied upon in this instance as well as in his other evidence in this case (which is corroborated by other witnesses), these vouchers require explanation.

The Third Auditor's statement shows that 50 cords of wood were purchased September 20, 1862, at \$4 per cord, on vouchers in favor of William Evans. Evans is said to have purchased a portion of Davis' wharf from Pendleton, Davis' agent. Lieut. Ma-

threw Sherman, who went to the post in November, 1861, swears that Lieutenant Glasby had partly finished a guard-house, when he, Sherman, arrived there, built out of lumber from the wharf.

I saw this guard-house during my visit to San Diego in June, 1881, and saw that it was built of plank similar to that described as being in the wharf.

The present cost of wood at San Diego is \$10.45 per cord. In the summer of 1861, when every thing there was much higher than now, the contract price was \$20 per cord, and it is in evidence that in the winter of 1861-'62 it went up to \$24 per cord.

I think it important that these papers should be considered in connection with my report already in your hands.

Very respectfully, your obedient servant,

RUFUS SAXTON,

Deputy Quartermaster-General, U. S. A.

QUARTERMASTER-GENERAL, U. S. A.

TREASURY DEPARTMENT, THIRD AUDITOR'S OFFICE,
Washington, D. C., December 3, 1881.

SIR: Referring to letter from this office dated October 1, 1881, in answer to inquiries made by General R. Saxton, chief quartermaster Military Division of the Pacific, in case of the claim of Wm. H. Davis for alleged destruction of wharf at San Diego, Cal., I have to state that upon further examination of the case it appears that the following purchases of wood were also made at San Diego, Cal., during the fourth quarter of 1861 from G. P. Tebbets, viz:

Nov. 20, 1861, 45 cords, at \$4.75	\$213 75
Dec. 28, 1861, 12 cords, at \$4.75	57 00

Purchased and paid for by Lient. W. A. Thompson, First California Infantry Volunteers.

Respectfully,

E. W. KEIGHTLEY,
Auditor.

Per J. M. V.

QUARTERMASTER-GENERAL, U. S. A.

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
Washington, D. C., December 1, 1881.

Mr. ZGLINITZKI: Please inform me the amount of rainfall at San Diego, Cal., during the following months:

	Inches.
December, 1861	2.91
January, 1862	7.55
February, 1862	1.35
March, 1862	0.70

An immediate answer is desired.

Yours, &c.,

JNO. WILSON.

Respectfully returned with the desired information.

B. ZGLINITZKI.

APPROPRIATION FOR THE EXPENSES OF THE TENTH
CENSUS.

MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

TRANSMITTING

A communication from the Secretary of the Interior recommending a further appropriation for the payment of expenses of the Tenth Census.

DECEMBER 21, 1881.—Referred to the Committee on Appropriations and Ordered to be printed.

To the House of Representatives :

I transmit herewith, for the consideration of Congress, a communication from the Secretary of the Interior, with an accompanying paper, in which he recommends a further appropriation for the payment of the expenses of the Tenth Census; also an appropriation of \$2,000 to recompense the disbursing clerk of the Department of the Interior for his services in disbursing the appropriations for the Tenth Census.

CHESTER A. ARTHUR.

EXECUTIVE MANSION, *December 21, 1881.*

DEPARTMENT OF THE INTERIOR,
Washington, December 20, 1881.

SIR: I have the honor to inclose herewith a communication from the Superintendent of the Census, in which he sets forth the reasons why there should be a further appropriation for the payment of the expenses of the Tenth Census, and, upon the grounds stated by him, to recommend that an appropriation of \$540,000 be made for the purpose. I also concur in the recommendation of the Superintendent that an appropriation of \$2,000 be made to recompense the disbursing clerk of the Interior Department for his services in disbursing the appropriations for the Tenth Census.

I have the honor to request that these matters be submitted to Congress at an early date.

Very respectfully,

S. J. KIRKWOOD.

Secretary.

The PRESIDENT.

DEPARTMENT OF THE INTERIOR, CENSUS OFFICE,
Washington, D. C., December 19, 1881.

SIR: I had the honor to address the department upon the 12th instant, urging that the appropriations committees of Congress be requested to provide funds at the earliest practicable date to meet the immediate pressing necessities of this bureau, as set forth in our annual report.

It is now doubtful, however, whether the Appropriation Committee of the House will be named in time to admit of any action being taken by it before the customary holiday recess.

I wish, consequently, to submit the question whether an appropriation sufficient to meet our more urgent necessities may not be made without a reference to the Appropriation Committee.

I know not how better to present the reasons which make this course desirable than by quoting the language of my predecessor in the annual report of this bureau.

"During the first half of 1881, the suspension of the work of compilation in this office was threatened by a very serious obstacle, namely, the failure of the appropriation for the service.

"When, on the 5th of January last, this office recommended an additional appropriation of \$500,000 to complete the work of the census, it was done in perfectly good faith, in the belief that the sum named would be adequate to that end. At that time, however, a very large part of the field work in the departments of mining, manufactures, and social statistics, still remained to be done. The cost of completing that service has been found to be heavier than was at the time anticipated. Moreover, the tabulations which had been undertaken in the central office, upon a scale far exceeding that of any preceding census, proved to be more laborious and expensive than was expected. Another source of expense beyond the estimates of the Superintendent, and one perhaps as important as either of the two just indicated, has been found in the occasions, which have developed in the course of our investigations, for securing accuracy and completeness in the statistical material brought into the office by the enumeration, beyond the degree heretofore attempted in a census of the United States.

"From the causes indicated, viz: first, the unexpected cost of completing the field work in the departments of mining, manufactures, and social statistics; second, the weight of the new compilations and tabulations undertaken, for the first time, at this office, greatly exceeding the Superintendent's estimate; and third, the labor involved in bringing the statistical material of the census up to a higher point of completeness and accuracy, the expenditures of this office were so enhanced that it became manifest, during the month of May, that the appropriation would not be sufficient to complete the service.

"In this emergency two courses were open: first, to disband the office force, retaining only a small number of clerks to prepare for publication whatever statistical matter had already been compiled, and, for the rest, to await the action of Congress upon the recommendation of a new appropriation when it should meet in the December following; or, second, to accept the service of volunteers, upon the condition of their expressly disavowing any claim against the government being created by their services, and with their aid to carry forward the compilations of the census as rapidly as possible towards completion.

"Respecting this alternative, the Superintendent conferred with the honorable the Secretary of the Interior and with the honorable the Attorney-General, who concurred in the opinion that it would be exceedingly unfortunate to disband the office force and discontinue, for eight or ten months, the work of tabulation and compilation: and that if a sufficient number of the employes of the Census Office should be found disposed to volunteer their services, upon the condition indicated, no legal or political objection interposed. As the result of this conference the following letter was addressed to the honorable the Secretary of the Interior, viz:

"DEPARTMENT OF THE INTERIOR, CENSUS OFFICE,
Washington, D. C., May 27, 1881.

"Hon. ALONZO BELL,

"Acting Secretary of the Interior:

"SIR: I have the honor to ask your attention to the following considerations and to a suggestion based thereon:

"By an error of calculation, for which I am alone responsible, the estimate for the appropriations required for carrying on and completing the work of the Tenth Census were framed, as the result proves, too low. The vast extent and complexity of the investigations undertaken by this office have caused a more rapid exhaustion of the amount appropriated for this service than was contemplated, and I find myself now in a position of being obliged to suspend the work upon considerable portions of the

field until the next session of Congress, unless some exceptional arrangement can be made which will allow the continuance of my present office force.

"Such a suspension would be a matter of regret on two accounts: first, because the public interest in the results of the enumeration makes the earliest possible completion of the tabulations and compilations of the office a matter greatly to be desired; and secondly, because such a suspension would involve the disbanding of a clerical force which I sincerely believe is not surpassed in efficiency through all the departments of the government. To disband the force and to recruit another, at a later date, should Congress make appropriation of additional funds for carrying on the service, would of itself involve a certain loss of efficiency.

"Fully appreciating the fact that no contract, express or implied, can lawfully be made with any person for services or supplies on behalf of the government in anticipation of an appropriation therefor, I venture to suggest whether it might yet not be consistent with the provisions of law, as well as decidedly for the interest of the public service, to accept as volunteers in completing the work of the census during the coming season such of the members of the present office force as are willing to continue in the office under a complete disclaimer of any claim thereby to be created against the government, and with a formal profession of their willingness to submit the question of their compensation to the decision of Congress, without any alleged obligation to make appropriations on such account.

"I am satisfied that at least two-thirds of my present force would esteem it a privilege to be permitted to continue work upon these terms, while the result to the government would be that at the meeting of Congress in December it would find the tabulations of the census completely finished, and a considerable portion of the statistical tables in type, ready for distribution.

"If this suggestion is deemed practicable, I should be greatly pleased to give effect thereto on being duly authorized, and I pledge myself to use my utmost energy to finish the work with the least possible expenditure of clerical labor.

"I have the honor to be, very respectfully,

"FRANCIS A. WALKER,
"Superintendent of Census."

"To this communication the following reply was received, viz:

"DEPARTMENT OF THE INTERIOR,
"Washington, June 3, 1881.

"General F. A. WALKER,
"Superintendent Tenth Census:

"SIR: I have fully considered your letter of May 27, in relation to the condition of the appropriation for the Tenth Census and the necessity of a suspension of important work unless some exceptional arrangement can be made which will allow the continuance of your present office force.

"Your suggestions in relation to the acceptance of a volunteer force (provided such can be secured willing to disclaim all claims against the government on account of services rendered) are fully concurred in by me.

"The postponement of the important work upon which you are engaged, on account of a lack of clerical force, would work serious inconvenience and loss to the public interests, and while it should be clearly understood that the government has no legal right to make any contract, express or implied, that shall bind it in anticipation of appropriations, you are authorized to say to all who desire to serve without pay, and with an express disclaimer in relation thereto, that all of the facts necessary to a full understanding of the case will be laid before Congress at the earliest practicable moment.

"Very respectfully, &c.,

"A. BELL,
"Acting Secretary."

"Acting under the authority given in the above letter, an average force of seven hundred assistants has been retained from the 15th of June to the present time.

"Not only has no falling off in efficiency been manifested by the clerical force as a consequence of the peculiar and regrettable condition of service, but the average amount of work done in every division of the office has steadily improved.

"The volunteer service thus far (to November 1, 1881) rendered, under the arrangements hereinbefore detailed, would, if paid for according to the rates of compensation received prior to June 15, 1881, by the several individuals rendering such service, amount to \$243,640.92.

"This statement includes both the clerical force at Washington and the experts and special agents engaged upon field work or in the preparation of their reports outside of Washington.

"I regret to have to add that, beyond the service thus rendered under an express disavowal of any claim being created against the United States thereby, a small body of liabilities has unavoidably been created in bringing the work of the census to a conclusion. As soon as I apprehended the danger of a deficiency I whistled down brakes, and tried to stop the train before it reached the draw; but a service so gigantic, moving so rapidly, has a momentum which it is not always possible to calculate with nice accuracy, and in spite of every effort to escape an actual deficiency (aside from the personal volunteer service heretofore referred to) the office found itself subject to certain calls for which no funds were provided. These were of three classes:

"First. The rent of the main Census Building since the 1st of July, 1881, being at the rate of \$1,083.33 $\frac{1}{3}$ per month. The lessors have expressed their entire willingness to await the action of Congress.

"Second. Certain amounts from subsidized railroads for transportation of officers and agents of the census, amounting to \$3,642.48.

"Even had sufficient funds been available for the payment, these accounts for transportation could not, up to this time, have been paid, inasmuch as the railroads concerned are delinquent in respect to the repayment of certain sums extorted as regular fare from the agents of the Census Office traveling under instructions and presenting duly authenticated orders for transportation at government rates.

"Third. Certain miscellaneous expenses for traveling, for supplies and for minor services, in respect to which no arrangement could properly be made for postponing payment.

"Being unwilling that the persons entitled to these sums, generally in small amounts, should be required to await the action of Congress upon their just and proper claims, I addressed a letter to the honorable the Secretary of the Interior, in the following terms, viz:

"DEPARTMENT OF THE INTERIOR, CENSUS OFFICE,
"Washington, D. C., October 3, 1881.

"Hon. S. J. KIRKWOOD,
"Secretary of the Interior:

"SIR: I have the honor to state that upon ascertaining, in May last, that the appropriation of the Tenth Census would necessarily prove inadequate to the needs of the service, I shut down as quickly and peremptorily as possible upon all sources of expense.

"With a service so vast, however, and so widely spread, with between thirteen and fourteen hundred employes in the Washington office, and with several hundred special agents scattered over the country, all the way from Arizona to Alaska, it was not possible to estimate closely the total of unadjusted accounts, while there were some points at which expenditure could not be abruptly terminated (for instance, as by recalling an agent from a distant field already nearly canvassed) without a great loss to the service, amounting to the practical abandonment of what had been done in that field.

"I regret to say that, in consequence of the accounts for obligations incurred at the date mentioned proving larger than was anticipated, and of the seemingly imperative necessity of keeping up some small disbursements in several directions for the reason just indicated, there will be required, to carry this office through to the meeting of Congress, several thousands of dollars; it may be three, it may be five thousand.

"As no appropriation is available for this purpose, and as it would not be creditable to allow these accounts to remain unpaid, I respectfully propose to the department that it give its sanction to my depositing with the disbursing agent of the department a sum of money, out of my own private resources, sufficient to meet the charges referred to, all accounts to be approved as usual by the Secretary of the Interior, and ordered for payment in the accustomed form.

"Should Congress consent to make appropriation for the uncompleted work of the census, I can be reimbursed; if not, the loss will be my own—a loss I would rather submit to than have those who have rendered service to the government, or incurred expenditures on its behalf, suffer for my error in calculating the probable needs of the service.

"Very respectfully,

"F. A. WALKER,
"Superintendent of Census."

"To this letter a reply was received from the department as follows, viz:

"DEPARTMENT OF THE INTERIOR.
"Washington, D. C., October 4, 1881.

"General FRANCIS A. WALKER,
"Superintendent of the Census:

"SIR: I have the honor to acknowledge the receipt of your communication of the 3d instant, relative to the exhaustion of the appropriation for the expenses of the Tenth

Census, and requesting my sanction to your depositing a certain amount of money, from your private means, in the hands of the disbursing clerk of this department to meet certain obligations already incurred, &c.

"In consideration of the fact that it is difficult to estimate closely for the expenditures under this head, and that to abruptly terminate all disbursements would necessarily cause great loss to the service, I hereby sanction the proposition you make for meeting these obligations from your own private funds, to be done through the disbursing clerk, or in any other way you may desire. In doing this, however, you will understand that I assume no responsibility in the matter, and that such vouchers as you may pay cannot be considered as constituting any claim against the government, and any risk that may be incurred as to your repayment must be assumed by you, pending the future action of Congress in the matter. Should you do this, it should be officially communicated to Congress at its next session.

"Very respectfully,

"S. J. KIRKWOOD,
"Secretary."

"Under the foregoing arrangement, \$4,889.97 have been paid out of my own private funds in liquidation of these accounts, which are all adjusted to date. Seven or eight hundred dollars more will probably be required to be paid in the same manner prior to the meeting of Congress, of which a full account will be rendered. Should it please Congress to make an appropriation to cover the amounts so expended, I shall be glad to be reimbursed for expenditures made in good faith and for the public interest. If not, I shall accept the decision of that body, and regard the amount so expended as my personal contribution to the success of a great public work.

"In view of the exhaustion of the appropriation for this service, as recited, I respectfully recommend that the further sum of \$540,000 be appropriated for the compensation of those who have rendered services as volunteers, as hereinbefore stated, and for the completion of the Tenth Census.

"Of this sum about \$330,000 would be applied to the payment of the volunteer force of the office, down, say, to the 15th of December, and to the liquidation of the three classes of obligations referred to."

It will be seen, therefore, that, aside from the amount provided for engraving and printing, the bureau is absolutely without funds, and the urgency of our needs is apparent.

Furthermore, it is pitiable that the volunteer force should be, for a moment longer than is absolutely necessary, subjected to the onerous discounts which are unavoidably connected with the negotiation of the certificates. I am confident that no body of clerks in the employ of the government have better merited consideration than our volunteers. With very few exceptions their efficient attention to duty has been all that could be asked. If it is possible to provide for their restoration to the regular roll of this office for the present month, it surely should be done.

I desire also to renew the recommendation made by my predecessor that an appropriation of \$2,000 be made to recompense Dr. Richard Joseph, the very efficient disbursing clerk of the Interior Department, for his services in disbursing the census appropriations.

The extraordinary labor and responsibility imposed upon Dr. Joseph by this addition to his ordinary duties has been very great, and the duty has been most admirably performed.

The nature of this service is fully set forth in a letter addressed to the department by this bureau, dated August 12, 1880.

Very respectfully, your obedient servant,

C. W. SEATON,
Superintendent of Census.

The Hon. the SECRETARY OF THE INTERIOR.

H. Ex. 10—2

○

CONTINGENT EXPENSES OF THE WAR DEPARTMENT.

L E T T E R

FROM

T H E S E C R E T A R Y O F W A R ,

TRANSMITTING

A statement of expenditures from the contingent fund of the War Department for the fiscal year ended June 30, 1881.

JANUARY 5, 1882.—Referred to the Committee on Expenditures in the War Department, and ordered to be printed.

WAR DEPARTMENT,
Washington City, December 5, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, a statement of the expenditures from the appropriations for the contingent expenses of the War Department and its bureaus, for the fiscal year ending June 30, 1881.

ROBERT T. LINCOLN,
Secretary of War.

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

STATEMENT OF EXPENDITURES

FROM THE

APPROPRIATIONS FOR CONTINGENT EXPENSES OF THE WAR DEPARTMENT

FOR

FISCAL YEAR 1881.

OFFICE SECRETARY OF WAR.

Date.	To whom paid.	On what account.	Amount.
1880.			
July 2	Washington and Georgetown Railroad Company.	Tickets for use of messengers.....	\$30 00
6	Charles F. Moore.....	Campbor, oil, &c.....	25 35
7	J. F. Mann.....	Subscription, Daily Post.....	6 00
12	National Republican Printing and Publishing Company.	Subscription, Republican.....	12 00
21	W. C. & F. P. Church.....	Subscription, Army and Navy Journal.....	6 00
21	James J. Chapman.....	Flexible rulers.....	24 00
31	Washington and Georgetown Railroad Company.	Tickets for use of messengers.....	30 00
31	Catharine Graham.....	Washing towels, for July.....	20 00
Aug. 2	William Callow.....	Subscription, New York Tribune, July.....	1 50
2	Murray & Barker.....	Shoeing horses.....	10 00
5	J. W. Drew.....	Soap.....	3 00
6	City post-office.....	Newspaper-wrappers.....	21 80
7	Charles F. Moore.....	Insect-powder, &c.....	16 30
13	J. Baumgarten.....	Hand-stamp.....	8 00
20	Francis B. Mohun.....	Stationery.....	1,056 32
31	Catharine Graham.....	Washing towels, August.....	20 00
31	Murray & Barker.....	Shoeing horses.....	14 00
Sept. 1	Washington and Georgetown Railroad Company.	Tickets for use of messengers.....	30 00
1	William Callow.....	Subscription, N. Y. Tribune, August.....	1 50
2	B. W. Reed's Sons.....	Dusters, brooms, &c.....	39 28
15	Charles F. Moore.....	Alcohol, oil, &c.....	8 95
18	William S. Mitchell.....	Oil-cloth, mats, &c.....	123 15
18	Joseph N. Wright.....	Soap.....	10 93
28	E. Morrison.....	Printing-paper.....	5 50
29	Louis Koerth.....	Labor, expressage, &c.....	45 63
30	Francis B. Mohun.....	Stationery, August.....	634 80
30	do.....	Stationery, September.....	473 76
30	Catharine Graham.....	Washing towels, September.....	20 00
30	Oscar L. Berger.....	Regulating clocks.....	13 50
30	William Callow.....	Subscription, New York Tribune, Sept.....	1 50
30	Murray & Barker.....	Shoeing horses.....	11 75
30	J. Blatzheim.....	Locks and keys.....	10 50
30	City post-office.....	Deficient postage.....	4 36
30	F. Schneider & Son.....	Hardware.....	102 89
Oct. 2	Washington and Georgetown Railroad Company.	Tickets for use of messengers.....	30 00
14	Joseph N. Wright.....	Soap.....	25 86
19	H. L. Pelouze & Son.....	Printing materials.....	9 93
25	G. M. Wight.....	Office furniture.....	48 00
26	Charles F. Moore.....	Paints.....	8 25
29	Mary A. Barker.....	Silver polish.....	2 48
30	Catharine Graham.....	Washing towels, October.....	20 00
30	Murray & Barker.....	Shoeing horses.....	11 00

OFFICE SECRETARY OF WAR—Continued.

Date.	To whom paid.	On what account.	Amount
1880.			
Nov. 1	William Callow	Subscription, New York Tribune, Oct.	\$1 50
2	William S. Holliday	Book for library	2 00
2	Washington and Georgetown Railroad Company.	Tickets for use of messengers	30 00
10	B. W. Reed & Sons	Soap for scrubbers	29 54
13	M. Crut	Carriage on public business	5 00
18	Adams Express Company	Freight	2 25
19	Francis B. Mohun	Stationery	750 65
24	G. W. Wells	Fountain sponge-cups	7 50
27	H. L. Pelouze & Son	Printing materials	5 42
29	Charles F. Moore	Carbolic soap	10 20
30	Murray & Barker	Shoeing horses	10 00
30	Catharine Graham	Washing towels, November	20 00
30	William Callow	Subscription, New York Tribune, Nov.	1 50
Dec. 1	Washington and Georgetown Railroad Company.	Tickets for use of messengers	30 00
4	M. B. Brady	Cabinet cards	5 00
4	Houghton, Mifflin & Co.	Postal Guides	10 50
15	Mantz & Co.	Harness and repairs	130 50
21	Francis B. Mohun	Stationery	605 55
22	J. Blatzheim	Locks and keys	9 65
31	Catharine Graham	Washing towels, December	20 00
31	William Callow	Subscription, New York Tribune, Dec.	1 25
31	Murray & Barker	Shoeing horses	16 00
31	O. L. Berger	Regulating and repairing clocks	18 50
31	James J. Chapman	Diaries	64 50
31	Samuel Hodgkins	Picture-frames	22 00
31	J. F. Mann	Subscription, Daily Post, two copies	6 00
31	City post-office	Deficient postage	2 13
31	Mary Crut	Carriage on public business	3 00
31	Louis Koerth	Labor, expressage, &c	12 84
31	Francis B. Mohun	Stationery	957 88
31	H. Semken	Repairing clock	2 00
1881.			
Jan. 3	Washington and Georgetown Railroad Company.	Tickets for use of messengers	30 00
5	W. H. Boyd	City Directories	50 00
12	John L. Gineck & Co.	Subscription, Law Reporter	1 50
12	Charles F. Moore	Insect-powder, &c	9 50
14	George F. Timmis & Co.	Rubber overcoats for mail-drivers	8 00
21	Julius Baumgarten	Rubber stamps	34 00
29	Washington and Georgetown Railroad Company.	Tickets for use of messengers	30 00
31	Catharine Graham	Washing towels, January	20 00
31	William Callow	Subscription, New York Tribune, Jan.	1 50
31	Murray & Barker	Shoeing horses	18 63
Feb. 7	Charles F. Moore	Sponge, alcohol, &c	8 10
7	John W. Drew	Soap	13 25
9	Francis B. Mohun	Stationery	1,000 25
11	B. Robinson & Co.	Overcoat for mail-driver	20 00
25	Washington and Georgetown Railroad Company.	Tickets for use of messengers	30 00
28	Catharine Graham	Washing towels, February	20 00
28	Murray & Barker	Shoeing horses	11 25
Mar. 1	William Callow	Subscription, New York Tribune, Feb.	1 50
2	William S. Mitchell	Towels, &c	49 00
7	T. Haswell	Spofford's Almanacs	1 50
21	Washington and Georgetown Railroad Company.	Tickets for use of messengers	30 00
22	H. Semken	Mantel-clock	88 00
23	Charles F. Moore	Camphor, &c	14 80
31	Louis Koerth	Labor, expressage, &c	20 75
31	Catharine Graham	Washing towels, March	20 00
31	City post-office	Deficient postage	5 40
31	Murray & Barker	Shoeing horses	8 00
31	William Callow	Subscription, New York Tribune, Mar.	1 50
31	J. Blatzheim	Repairing locks, &c	8 40
31	B. W. Reed & Sons	Laundry soap	7 50
31	M. Crut	Carriage on public use	2 00
31	Culver, Page, Hoyme & Co.	Office files	9 25
Apr. 11	Munn & Co.	Subscription, Scientific American	1 75
12	James J. Chapman	Stationery-case	8 00
12	John W. Drew	Sponges, soap, &c	46 25
16	Washington and Georgetown Railroad Company.	Tickets for use of messengers	30 00
21	H. L. Pelouze & Son	Printing materials	54 74
21	R. A. Whitehand	Engraving plates	15 00
28	Department of State	Revised United States Statutes	6 55
30	Catharine Graham	Washing towels, April	20 00
30	William Callow	Subscription, New York Tribune, Apr.	1 50
30	Murray & Barker	Shoeing horses	7 00

CONTINGENT EXPENSES OF THE WAR DEPARTMENT.

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OFFICE SECRETARY OF WAR—Continued.

Date.	To whom paid.	On what account.	Amount.
1881.			
May 2	Henry Klotz.....	Ice.....	\$1 50
2	Charles H. Earl.....	Carriage on public use.....	2 00
4	James J. Chapman.....	Stationery-cases.....	16 50
6	B. W. Reed's Sons.....	Soap and soda.....	16 16
7	M. Cruik.....	Carriage on public use.....	7 00
7	Charles F. Moore.....	Disinfectants.....	11 65
12	Washington and Georgetown Railroad Company.....	Tickets for use of messengers.....	30 00
12	J. H. Rathbone, agent.....	Rowell's Directory.....	5 00
18	Francis B. Mohun.....	Stationery.....	150 00
25	M. Cruik.....	Carriage on public use.....	3 00
31	William Callow.....	Subscription, New York Tribune, May.....	1 50
31	Murray & Barker.....	Shoeing horses.....	12 00
31	Catharine Graham.....	Washing towels, May.....	20 00
June 14	Baltimore and Ohio Express.....	Freight.....	60
15	Herdic Pluett Company.....	Tickets for use of messengers.....	8 95
18	Charles F. Moore.....	Soap, alcohol, &c.....	8 25
28	Murray & Barker.....	Shoeing horses.....	13 50
30	Catharine Graham.....	Washing towels, June.....	20 00
30	William Callow.....	Subscription, New York Tribune, June.....	1 50
30	J. Blatzheim.....	Repairing locks, &c.....	7 70
30	M. W. Galt Bro. & Co.....	Engraving medal.....	1 25
30	Louis Koerth.....	Labor, expressage, &c.....	11 92
30	City post-office.....	Deficient postage.....	7 26
	Total.....		8,000 00
	Amount appropriated.....		8,000 00
	Amount expended.....		8,000 00

OFFICE ADJUTANT-GENERAL.

1880.			
July 7	P. H. Weber.....	Car-tickets for use of messengers.....	\$10 00
9	R. P. Barnes.....	Shaking carpet.....	1 50
10	J. M. Judd.....	Book for office library.....	3 00
10	W. M. Shuster & Sons.....	Crash.....	6 50
15	H. Baumgarten & Bro.....	Stamp ribbons.....	8 88
22	P. H. Weber.....	Car-tickets for use of messengers.....	25 00
27	National Republican Printing and Publishing Company.....	Subscriptions, Republican.....	6 25
28	H. Baumgarten.....	Office stamps.....	5 00
29	J. C. Allen.....	Labor, cleaning offices.....	26 00
Aug. 5	Adams Express Company.....	Freight on government parcels.....	1 30
5	Barker Bros.....	Ice for July.....	85 16
6	J. W. Boteler & Son.....	Dusters, brooms, &c.....	37 15
9	Washington Gas Company.....	Gas for July.....	4 60
10	Mary French.....	Washing towels, July.....	29 28
13	Francis B. Mohun.....	Stationery, July.....	447 36
14	Smith Thompson.....	File-boxes.....	100 00
16	W. W. Farr.....	Clocks.....	21 00
31	Mary French.....	Washing towels, August.....	38 81
Sept. 2	Barker Bros.....	Ice for August.....	80 97
6	Washington Gas Company.....	Gas for August.....	4 60
7	Adams Express Company.....	Freight on government parcels.....	2 35
8	Joseph A. Jewett.....	Storing coal.....	29 00
11	P. H. Weber.....	Car-tickets for use of messengers.....	25 00
11	Joseph A. Jewett.....	Labor, cleaning, &c.....	60
11	Edward W. Very.....	Books for office library.....	7 50
16	Edward Dillon.....	Carpentry.....	38 00
18	Francis B. Mohun.....	Stationery for August.....	295 66
28	Charles F. Moore.....	Insect-powders, &c.....	10 70
30	Mary French.....	Washing towels, September.....	25 73
30	Washington Gas Company.....	Gas for September.....	7 20
30	Jacob Blatzheim.....	Repairing locks.....	2 75
30	Edward Dillon.....	Repairing furniture.....	1 25
30	J. W. Boteler & Son.....	Dusters, brooms, &c.....	59 80
30	Barker Bros.....	Ice for September.....	79 57
30	Francis B. Mohun.....	Stationery for September.....	372 15
30	City post-office.....	Deficient postage.....	3 44
30	F. Schneider & Son.....	Hardware.....	19 35
Oct. 21	J. C. Newton.....	Glazing and painting.....	25 40
28	Charles L. Woodward.....	Book for office library.....	2 00
30	Mary French.....	Washing towels, October.....	26 88
30	Nordet & Co.....	Lap-rube, &c.....	29 00
Nov. 2	Barker Bros.....	Ice for October.....	49 66
4	P. H. Weber.....	Car-tickets for use of messengers.....	25 00
5	John Keyworth.....	Soap, matches, &c.....	37 25
5	T. H. S. Hamerly.....	Books for use of office.....	48 00

OFFICE ADUTANT-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1880.			
Nov. 6	Washington Gas Company	Gas for October	\$0 00
6	Francis B. Mohun	Stationery for October	479 00
8	Francis Miller	Brushes and oil	9 25
16	M. G. Copeland & Co.	Taking down awnings	12 90
17	Wm. S. Mitchell	Carpet, mats, &c.	62 80
22	W. W. Farr	Repairing clocks	4 75
24	James Ginnaty	Labor, moving safe	8 00
27	Joseph A. Jewett	Removing snow	3 60
30	Mary French	Washing towels, November	18 20
30	Alice Howard	do.	13 67
30	Chas. F. Moore	Sponges, &c.	9 50
Dec. 2	Barker Bros	Ice for November	49 91
3	E. Morrison	Book paper	25 20
7	Washington Gas Company	Gas for November	16 00
8	Francis B. Mohun	Stationery for November	470 75
10	J. A. Jewett	Storing coal	3 70
18	W. M. Shuster & Sons	Cotton cloth	10 50
20	W. H. Dunn	Office furniture	59 25
22	J. Blatzheim	Bell-pull	1 00
22	J. A. Jewett	Removing snow	16 75
23	M. B. Brady	Photograph	10 00
27	Theodore Winn	Removing snow	8 29
30	P. H. Weber	Tickets for use of messengers	25 00
30	Theodore Winn	Removing snow	7 55
30	John Malone	Picture glass	8 88
31	Mary French	Washing towels, December	15 77
31	Alice Howard	do.	11 55
31	W. M. Shuster & Sons	Book-case lining	6 00
31	Barker Bros	Ice for December	50 30
31	Washington Gas Company	Gas for December	23 80
31	City post-office	Deficient postage	3 87
31	Francis B. Mohun	Stationery, December	438 88
31	J. W. Boteler	Dusters, brooms, &c.	102 65
1881.			
Jan. 3	Theodore Winn	Removing snow	5 40
8	W. H. Boyd	City Directories for office	50 00
10	Joseph A. Jewett	Removing snow	4 85
12	F. Schneider & Son	Hardware	41 98
12	Joseph A. Jewett	Removing snow	2 50
14	E. Morrison	Flat paper	10 12
15	H. Baumgarten	Stamp ribbons, &c.	4 75
20	B. W. Reed's Sons	Coaline	11 45
21	Francis Miller	Sperm oil	3 85
22	Joseph A. Jewett	Storing coal	2 50
26	do.	do.	5 00
29	W. S. Mitchell	Window shades, &c.	70 88
Feb. 2	Francis B. Mohun	Stationery, January	532 51
2	Mary French	Washing towels, January	18 65
2	Alice Howard	do.	14 15
2	Joseph A. Jewett	Removing snow	9 05
2	Barker Bros	Ice for January	49 91
3	J. C. Newton	Painting office signs	10 00
4	Adams Express Company	Freight on government parcels	60
5	Norfleet & Co.	File-straps	23 25
7	Washington Gas Company	Gas for January	18 20
10	A. F. Rockwell, A. Q. M.	Muskrat cap	90
11	A. Hahl & Co.	Electric office-bells	11 05
15	P. H. Weber	Car-tickets for use of messengers	25 00
16	E. Morrison	Book paper	70 57
17	H. Baumgarten	Stamp ribbons	2 50
17	Southern Historical Society	Subscription to papers	6 00
21	W. W. Farr	Repairing clock	2 00
26	John Koyworth	Soap, matches, &c.	50 80
28	Mary French	Washing towels, February	15 00
28	Alice Howard	do.	12 00
Mar. 1	E. Morrison	Flat paper	252 60
2	Washington and Georgetown Ice Co.	Ice for February	46 04
5	Joseph A. Jewett	Storing coal	2 70
7	W. W. Farr	Clock	9 00
8	Washington Gas Company	Gas for February	19 20
17	J. M. Judd	Spofford's Almanacs	8 00
19	Francis B. Mohun	Stationery, February	332 80
26	Joseph A. Jewett	Storing coal	5 00
31	Alice Howard	Washing towels, March	11 95
31	Mary French	do.	15 75
31	P. H. Weber	Tickets for use of messengers	25 00
31	Francis B. Mohun	Stationery, March	433 70
31	Washington and Georgetown Ice Co.	Ice for March	51 77
31	City post-office	Deficient postage	4 17
31	J. W. Boteler & Son	Dusters, brooms, &c.	67 65
31	W. W. Farr	Repairing clock	2 50

CONTINGENT EXPENSES OF THE WAR DEPARTMENT.

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OFFICE ADJUTANT-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1881.			
Mar. 31	W. N. Dalton	File-laces	\$4 50
31	Adams Express Company	Freight on government parcels	1 85
31	Washington Gas Company	Gas for March	19 20
Apr. 11	F. Schneider & Son	Hardware	28 38
12	Joseph A. Jewett	Storing coal	4 15
21	H. L. Pelouze & Son	Printing materials	13 50
23	Perry & Bro	Desk cover	3 21
30	Alice Howard	Washing towels, April	12 45
30	Mary French	do.	14 85
May 4	Washington and Georgetown Ice Co.	Ice for April	49 86
6	Washington Gas Company	Gas for April	19 00
6	John Keyworth	Soap, matches, &c	23 44
7	W. W. Farr	Repairing clocks	3 00
10	Francis Miller	Mucilage and brushes	9 50
10	Adams Express Company	Freight on government parcels	35
14	Mary Maher	Scrubbing offices	2 50
17	William S. Mitchell	Carpets, rugs, &c	159 09
17	Francis B. Mohun	Stationery, April	520 00
18	D. Appleton & Co	Books for office use	24 00
19	P. H. Weber	Car-tickets for use of messengers	25 00
19	W. B. Moses & Son	Office furniture	15 50
20	Nordflet & Co.	Covers for horses of mail wagon	13 50
26	John D. Sabine	Postal cards	1 00
26	Lockwood, Brooks & Co.	Books, office library	11 20
28	H. O. Towles	Office furniture	1,015 50
31	Charles F. Moore	Sponge, soap, &c	10 99
31	H. Baumgarten	Stamp ribbons	3 25
June 2	George Ryneal, jr	Varnish	2 05
2	E. Morrison	Bristol-board	27 75
2	M. G. Copeland & Co.	Awnings	80 80
2	Alice Howard	Washing towels, May	16 33
3	Mary French	do.	17 73
3	Washington and Georgetown Ice Co.	Ice for May	71 21
4	J. W. Boteler & Son	Water-coolers, &c	59 15
6	Western Union Telegraph Company	Official telegrams	207 99
7	Washington Gas Company	Gas for May	11 80
8	Adams Express Company	Freight on government parcels	3 75
10	R. P. Barnes	Washing windows	1 50
15	William S. Mitchell	Carpets, &c	73 34
16	John Malone	Freight on office package	1 00
18	H. L. Pelouze & Son	Printing materials	17 00
18	Franklin & Co.	Lenses	11 25
20	W. W. Farr	Repairing locks	3 50
21	M. E. Mann	Books, office library	14 00
21	Francis B. Mohun	Stationery, May	702 90
25	John Keyworth	Soap, brooms, &c	38 25
27	E. W. Woodruff	File-boxes	300 00
27	P. H. Weber	Car-tickets for use of messengers	25 00
29	E. Morrison	Heavy paper	7 25
30	Washington and Georgetown Ice Co.	Ice for June	86 72
30	Alice Howard	Washing towels, June	12 80
30	Mary French	do.	15 45
30	H. N. Barlow	Picture-frames	1 75
30	W. W. Farr	Repairing clock	2 00
30	Francis Miller	Brushes	4 25
30	Nordflet & Co.	Hitching-strap	1 75
30	Jacob Blatzheim	Repairing locks, &c	2 75
30	W. H. & O. H. Morrison	Books, office library	114 25
30	J. W. Boteler & Son	Dusters, &c	30 03
30	Francis B. Mohun	Stationery, June	240 06
30	George W. Cullom	Books for office use	90 00
30	F. Schneider & Son	Hardware	58 89
30	Charles F. Moore	Sponge, &c	10 00
30	H. H. Nichols	Drawings and engravings	10 00
30	Washington Gas Company	Gas for June	11 80
30	City post-office	Deficient postage	5 97
30	Western Union Telegraph Company	Official telegrams	179 67
30	do.	do.	168 28
30	F. Schneider & Son	Hardware	4 55
30	W. S. Mitchell	Matting, &c	79 90
30	Adams Express Company	Freight on government parcels	15 60
			11,870 48
Amount appropriated (act of June 15, 1880)			10,000 00
Amount appropriated (act of March 3, 1881)			1,760 00
			11,760 00
Amount expended			11,870 48
Balance carried to account of 1882			879 52

CONTINGENT EXPENSES OF THE WAR DEPARTMENT.

OFFICE SURGEON-GENERAL.

Date.	To whom paid.	On what account.	Amount.
1880.			
July 21	Lansburg & Bro	Blue cloth	\$4 1
21	National Republican P. & P. Company	Subscription to Republican	6 0
23	L. F. Clark & Son	Window-shades	8 0
Aug. 9	Washington Gas Company	Gas for July	3 50
14	Robert Fitzgerald	Storing fuel	33 05
18	Thomas Olliffe	do.	31 50
24	Western Union Telegraph Company	Official telegrams.	2 15
Sept. 6	Washington Gas Company	Gas for August.	2 50
14	Stover & Co	Wood and coal	741 10
16	Western Union Telegraph Company	Official telegrams.	9 75
30	A. Hyde, attorney	Rent for July, August, and September	800 00
30	Washington Gas Company	Gas for September	4 00
30	Jacob Blatzheim	Repairing locks, &c	6 75
30	Peter Vowell	Scrubbing offices.	4 00
30	John F. Doran	Shoeing horses.	7 50
30	Conrad Becker	Repairing harness	4 25
30	F. Schneider & Son	Hardware	9 50
30	J. K. Vernon	Carpentry	20 55
30	Great Falls Ice Company	Ice for July, August, and September	174 62
30	M. W. Beveridge	Soap-dishes	4 10
Oct. 2	John Wilson	Washing towels	27 25
8	J. C. Newton	Glazing, &c	1 50
11	W. M. Galt & Co	Hay, straw, &c.	34 07
15	E. F. Simpson	Heating-furnace	86 00
19	C. P. Clark	Office step-ladder.	8 00
19	John Wanstall, V. S.	Professional services.	10 00
28	Western Union Telegraph Company	Official telegrams.	3 75
Nov. 5	T. H. S. Hamersly	Books for office library	46 00
6	Washington Gas Company	Gas for October	5 00
6	E. F. Simpson	Repairing heating apparatus	323 50
6	R. C. M. Burton	Taking down awnings	6 10
12	W. F. Clark	Papering office-rooms	54 70
23	W. D. Wyvill	Furnace-governor	20 00
Dec. 2	Charles Harling	Car-tickets for use of messengers	12 25
2	John Wilson	Index-book	17 10
4	Western Union Telegraph Company	Official telegrams.	23 12
7	City post-office.	Deficient postage.	1 40
7	Washington Gas Company	Gas for November	4 00
7	William Friederich, agent	Clock	4 50
20	R. W. Tonge	Press-rollers	6 12
23	Jacob Blatzheim	Hanging office-bell	4 25
28	Lyceet's bindery	Binders	8 00
31	Anthony Hyde, attorney	Rent, October, November, and December	800 00
31	Peter Vowell	Washing office windows	3 00
31	Washington Gas Company	Gas for December	9 00
31	John Wilson	Washing towels	28 75
31	Hoos, Bro. & Co	Carpets, &c	50 00
31	Great Falls Ice Company	Ice, October, November, and December	119 25
31	John F. Doran	Shoeing horses	9 00
31	William F. Vernon	Fire-screens	44 50
31	W. M. Galt & Co	Hay, straw, &c.	34 22
1881.			
Jan. 14	J. C. Newton	Glazing	3 10
15	Conrad Becker	Whip, &c	1 00
17	City post-office.	Deficient postage.	1 00
Jan. 24	F. Schneider & Son	Hardware	19 21
27	Francis B. Mohun	Stationery	30 00
28	Western Union Telegraph Company	Official telegrams.	1 10
Feb. 2	Chas. Harling	Car-tickets for use of messengers	12 00
5	W. D. Wyvill	Repairing furnace	25 00
5	W. W. Farr	Repairing clocks	11 00
7	Washington Gas Company	Gas for January	3 00
12	Wm. Santer	Repairing mail-wagon	3 00
Mar. 8	Washington Gas Company	Gas for February	3 00
16	E. F. Simpson	Stoves and repairs	30 00
31	Anthony Hyde, attorney	Rent, January, February, and March	800 00
31	Chas. Harling	Car-tickets for use of messengers	14 00
31	Jacob Blatzheim	Locks and keys	10 00
31	Washington Gas Company	Gas for March	8 00
Apr. 2	Peter Vowell	Washing office windows	9 00
8	H. Baumgarten	Dating-stamp	5 00
8	Robt. Leitch & Sons	Gns-fixtures	10 00
8	W. F. Clark	Window-shades	6 00
8	R. G. Campbell	Shades for gas	25 00
9	E. E. Jackson & Co	Lumber, August, 1880	10 00
9	do.	Lumber, April, 1881	10 00
13	City post-office.	Deficient postage	1 00
13	John Wilson	Washing towels	28 75
13	L. H. Schneider	Sheet-brass and rivets	20 00
14	John F. Doran	Shoeing horses	9 00
14	W. M. Galt & Co	Hay, straw, &c.	34 22

CONTINGENT EXPENSES OF THE WAR DEPARTMENT.

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OFFICE SURGEON-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1881.			
Apr. 14	Wm. F. Vernon.....	Repairing chairs.....	\$27 75
16	W. F. Clark.....	Window-shades.....	10 00
19	Great Falls Ice Company.....	Ice, January, February, and March.....	86 90
23	R. G. Campbell.....	Gas-reflectors.....	10 00
27	E. Morrison.....	Parchment paper.....	23 90
28	Houghton, Mifflin & Co.....	Postal-Guides.....	10 50
May 4	Western Union Telegraph Company.....	Official telegrams, January.....	4 36
4	do.....	Official telegrams, March.....	11 44
6	Washington Gas Company.....	Gas for April.....	9 60
12	L. H. Schneider.....	New seats for chairs.....	7 55
18	E. F. Brooks.....	Plumbing.....	2 10
19	R. C. M. Burton.....	Repairing awnings.....	96 20
21	L. H. Schneider.....	Chair-rollers.....	6 60
27	L. R. Trembly.....	Lumber for office use.....	16 00
June 3	Julius Petsch.....	Repairing roof.....	50 00
6	Western Union Telegraph Company.....	Official telegrams.....	5 17
7	Washington Gas Company.....	Gas for May.....	6 00
11	Stover & Co.....	Coal.....	195 50
11	Lycett's bindery.....	Binders.....	13 00
29	E. Morrison.....	Printing-paper.....	79 20
29	M. W. Beveridge.....	Water-coolers, &c.....	186 90
29	Conrad Becker.....	Horse-collar, &c.....	13 85
29	Lloyd Mudd.....	Removing rubbish.....	2 60
30	John F. Doran.....	Shoeing horses.....	10 37
30	Peter Thomas.....	Whitewashing.....	45 00
30	Chas. Harling.....	Car-tickets for use of messengers.....	30 00
30	John Wilson.....	Washing towels.....	25 00
30	J. C. Newton.....	Glazing, &c.....	8 55
30	H. Baumgarten.....	Rubber stamp.....	1 00
30	E. E. Jackson & Co.....	Lumber.....	72 75
30	Wm. F. Vernon.....	Repairing furniture.....	17 00
30	Anthony Hyde, attorney.....	Rent, April, May, and June.....	800 00
30	W. M. Galt & Co.....	Hay, straw, &c.....	40 14
30	Great Falls Ice Company.....	Ice, April, May, and June.....	70 84
30	Wm. Santer.....	Repairing mail-wagon.....	1 27
30	Jacob Blatzheim.....	Repairing locks.....	1 75
30	Wm. Frederick.....	Clocks.....	38 00
30	F. B. Mohnn.....	Stationery.....	17 75
30	W. S. Thompson.....	Soap and lime.....	43 40
30	John A. Baker.....	Repairing lawn-mower.....	3 50
30	Washington Gas Company.....	Gas for June.....	5 80
30	Western Union Telegraph Company.....	Telegrams on official business.....	3 78
30	L. H. Schneider.....	Nails for office use.....	2 55
30	E. F. Brooks.....	Rubber hose.....	1 65
30	F. Schneider & Son.....	Hardware.....	133 67
30	G. M. Wight.....	Office furniture.....	1,134 00
30	City post-office.....	Deficient postage.....	1 18
30	E. F. Simpson.....	Repairing fire-places.....	11 00
30	J. H. Henderson.....	Whitewashing.....	7 00
30	R. C. M. Burton.....	Awnings.....	146 00
30	Hooe, Bro. & Co.....	Carpets, mats, &c.....	343 25
Amount appropriated (act of June 15, 1880).....			8,782 29
Amount appropriated (act of March 3, 1881).....			8,000 00
			5,000 00
			13,000 00
Amount expended.....			8,782 29
Balance carried to account for 1882.....			4,217 71

OFFICE QUARTERMASTER-GENERAL.

1880.			
July 8	H. Schutter.....	Repairing ceilings.....	\$22 00
8	The New York Tribune.....	Subscription to daily.....	12 00
10	Thomas Stevenson.....	Scrubbing offices.....	15 00
10	Wm. S. Mitchell.....	Matting, rugs, &c.....	64 70
13	M. E. Mann.....	Book for office library.....	6 00
14	Washington and Georgetown Railroad Company.....	Railroad tickets for use of messengers.....	10 00
15	F. Burlingame.....	Subscription, Army and Navy Herald.....	2 50
15	Plumber and Sanitary Engineer.....	Subscription to magazine.....	2 00
16	Page, Booth & Co.....	Water-proof paper.....	3 25
16	Charles D. Lakey.....	Subscription to magazine.....	1 50
16	B. Westermann & Co.....	Professional publications.....	47 55
16	Commissioner of Patents.....	Patent Office Gazette.....	5 00

OFFICE QUARTERMASTER-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount
1880.			
July 16	L. R. Hamersly & Co.	Subscription, United Service.	\$5 00
16	J. Wm. Jones	Subscription, Historical Papers.	3 00
16	Munn & Co.	Subscription, Scientific American.	7 00
16	E. Steiger	Subscription, Scientific Magazines.	15 00
17	W. C. & F. P. Church	Subscription, Army and Navy Journal.	6 10
19	A. M. Tanner	Refilling hectograph.	4 00
20	J. W. Boteler & Son	Tumblers.	3 00
20	S. J. Haislett	Awnings.	33 27
20	James W. Queen & Co.	Metric paper.	3 00
21	J. Karr	Clocks.	30 25
23	David Williams.	Subscription, magazines.	5 70
28	James R. Osgood & Co.	Subscription, magazines.	6 00
31	Michael Dulanthy	Repairing office files.	19 50
31	H. Blau.	Laying matting.	11 20
Aug. 2	Catharine Graham	Washing towels, July.	20 00
2	Isabella Mackin	Scrubbing offices.	7 50
3	Walter Hawkes	Ice for July.	28 92
5	Barker Bros.	do.	12 12
5	J. W. Boteler & Son	Tumblers, &c.	11 25
5	Thos. Stevenson	Scrubbing and cleaning.	13 50
10	Francis B. Mohun	Stationery for July.	752 85
10	C. C. Wilson	Dating-stamp.	8 00
13	J. B. Conner, agent.	Subscription to Post.	4 20
17	W. B. Moses	Office furniture.	267 50
25	Thos. Stevenson	Whitewashing.	9 00
25	Washington and Georgetown Railroad Company.	Tickets for use of messengers.	10 00
25	Lorenzo Rice	Cleaning carpets.	52 44
26	Wm. S. Mitchell	Matting, rugs, &c.	143 10
27	W. Winthrop	Repairing stylographic pen.	75
31	Catharine Graham	Washing towels for August.	20 00
31	Isabella Mackin	Scrubbing offices.	6 00
31	M. Dulanthy	Repairing office files.	30 00
Sept. 3	S. J. Haislett	Awnings.	13 50
6	Walter Hawkes	Ice for August.	30 63
7	W. E. Spalding & Co.	Painting and glazing.	28 00
8	Edwd. W. Very	Book for office library.	7 50
11	B. W. Reed's Sons	Baskets, brooms, &c.	19 03
11	John H. Magruder	Soap.	6 45
15	Wm. S. Mitchell	Carpets, mats, &c.	196 38
17	Theodore Rue	Nickel plates.	6 75
17	Franklin & Co.	Thermometers.	1 00
17	Francis Mueller.	Locks and keys.	2 75
18	Francis B. Mohun	Stationery, August.	280 50
18	Luttrell & Wine	Towels for office use.	26 00
29	Thos. Stevenson	Scrubbing offices.	16 50
30	Catharine Graham	Washing towels, September.	20 00
30	Isabella Mackin	Cleaning offices.	10 47
30	Walter Hawkes	Ice for September.	30 50
30	Hubert Schutter	Repairing plastering, &c.	167 00
30	Francis B. Mohun	Stationery, September.	373 65
Oct. 6	G. A. Whitaker	Dictionary-rest.	1 75
9	E. W. Woodruff	File-holders.	52 50
14	G. G. Cornwell	Soap.	6 15
14	H. Blau.	Laying carpets.	66 61
16	Ellen O'Brien.	Scrubbing offices.	12 00
21	Yale Lock Manufacturing Company.	Record lock-boxes.	45 00
22	Geo. C. Maynard.	Connecting electric bells.	5 75
23	Hubert Schutter	Calclmining walls.	37 00
23	Thos. Stevenson	Cleaning offices.	9 00
27	T. H. S. Hamersly	Books for office library.	24 00
28	Washington and Georgetown Railway Company.	Tickets for use of messengers.	10 00
28	H. Semken.	Repairing chronometer.	10 00
30	Catharine Graham	Washing towels, October.	20 00
30	Wm. S. Mitchell	Carpets, rugs, &c.	86 65
30	Thos. Stevenson	Cleaning offices.	9 00
Nov. 3	Isabella Mackin	Scrubbing offices.	7 50
3	M. W. Beveridge	Pen-vase.	6 00
4	Walter Hawkes	Ice for October.	30 50
6	Francis B. Mohun	Stationery, October.	270 65
6	Royce & Marean	Repairing telegraph batteries.	11 00
8	W. B. Moses	Furniture and carpets.	214 54
13	S. J. Haislett	Taking down awnings.	11 90
17	Wm. F. Schmidt	Soap.	25 80
20	P. M. Kennerly	Portfolio.	6 00
23	E. W. Woodruff	File-holders.	12 00
Dec. 2	Isabella Mackin	Scrubbing offices.	6 37
3	Catharine Graham	Washing towels, November.	20 00
3	C. C. Wilson	Dating-stamps.	16 00
4	Thos. Stevenson	Washing office windows.	12 00

OFFICE QUARTERMASTER-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1880.			
Dec. 4	Walter Hawkes	Ice for November	\$26 00
8	Francis B. Mohun	Stationery, November	370 25
14	Washington and Georgetown Railroad Company.	Tickets for use of messengers	20 00
17	A. M. Tanner	Refilling hektograph	4 00
20	C. Schneider	Locks	8 00
20	Franklin & Co.	Thermometers	1 00
22	Francis Kannev	Removing snow	1 50
22	H. Blau	Laying matting	3 68
22	Theodore Rue	Nickel number-plates	15 60
31	Catharine Graham	Washing towels, December	20 00
31	Isabella Mackin	Scrubbing offices	7 87
31	Walter Hawkes	Ice for December	27 00
31	Francis B. Mohun	Stationery, December	397 21
1881.			
Jan. 8	E. W. Woodruff	File-holders	13 80
12	W. H. Boyd	City Directories	20 00
12	Royce & Marean	Repairing electric battery	5 83
12	John McClelland	Repairing copying-press	2 00
13	Cameron, Amberg & Co.	Index-books	60
13	B. Westermann & Co.	Magazines	14 22
13	George Ryneal, jr.	Oil, &c.	3 58
14	B. W. Reed's Sons	Matches, &c.	16 70
15	W. S. Thompson	Insect-powder, &c.	10 95
17	Ann Furlong	Scrubbing offices	10 50
17	L. H. Schneider & Co.	Hardware	48 55
19	A. F. Carman & Son	Disinfectants	7 50
22	W. E. Spaulding & Co.	Staining, &c., stairway	12 75
22	W. B. Moses & Son	Office furniture	73 25
28	Yale Lock Manufacturing Company	Record-boxes	20 60
29	Wm. S. Mitchell	Matting, rugs, &c.	148 33
31	G. G. Cornwell	Soap	5 30
Feb. 2	Isabella Mackin	Scrubbing offices	6 75
3	E. W. Woodruff	File-holders	24 80
4	Catharine Graham	Washing towels, January	20 00
4	Chas. F. Reade	Book, office library	4 25
7	Walter Hawkes	Ice for January	26 00
7	Ann Furlong	Scrubbing offices	4 50
8	W. W. Farr	Repairing clock	3 00
12	B. F. Brown	Dating-stamp	16 50
12	Thos. Stevenson	Scrubbing offices	12 00
14	The Papyrograph Company	Ink and pad	3 00
15	J. B. Conner	Subscription to Post	4 20
19	Thos. Stevenson	Cleaning offices	9 00
23	Francis B. Mohun	Stationery, January	420 00
26	W. B. Moses & Son	Office furniture	149 25
28	Walter Hawkes	Ice for February	24 00
Mar. 2	Isabella Mackin	Scrubbing offices	8 62
2	A. M. Tanner	Refilling hektograph	4 00
2	H. Blau	Laying matting	20 48
7	Catharine Graham	Washing towels, February	20 00
8	Francis B. Mohun	Stationery for February	244 10
9	G. G. Cornwell	Brooms, &c.	16 75
9	A. W. Latimore	Freight on government parcels	40
9	Thomas Stevenson	Cleaning offices	15 75
15	J. Z. Dare	Book, office library	8 00
15	Merrill, Hubbard & Co.	Books, office library	4 75
31	Catharine Graham	Washing towels, March	20 00
31	Isabella Mackin	Scrubbing offices	8 25
31	Walter Hawkes	Ice for March	27 00
31	G. G. Cornwell	Soap and dusters	14 40
31	Thomas Stevenson	Washing office windows	10 50
31	James W. Queen & Co.	Draughtsman's instruments	16 16
31	D. Shepherd Holman	Franklin Institute Journal	5 00
Apr. 8	W. B. Moses & Son	Matting, &c.	136 25
9	Francis B. Mohun	Stationery for March	161 85
9	Thomas Stevenson	Cleaning offices	10 50
13	Hubert Schmiter	Painting office walls	69 50
15	Journal of Industry Company	Subscription to magazine	2 00
16	W. C. Milburn	Chamois skins	11 65
18	Thomas Stevenson	Scrubbing offices	8 25
19	J. Temple Brown	Repairing type-writer	3 50
19	L. H. Schneider	Hardware	19 31
21	Washington and Georgetown Railroad Company.	Tickets for use of messengers	5 00
23	Lorenzo Rice	Cleaning matting	8 00
23	J. W. Boteler & Son	Water-coolers	20 25
23	James T. Queen & Co.	Paper scales	3 00
23	B. Westermann & Co.	Books for office library	61 99
23	W. W. Farr	Repairing clock	2 00
23	T. B. Prim	File-holders	8 88
29	J. W. Sheckels	Repairing locks	2 25

OFFICE QUARTERMASTER-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1881.			
Apr. 30	Catharine Graham	Washing towels, April	\$20 00
May 2	A. M. Tanner	Refilling hektograph	4 00
3	Hubert Schutter	Painting office walls	26 00
4	Isabella Mackin	Scrubbing offices	7 87
6	Walter Hawkes	Ice for April	26 00
9	Francis B. Mohun	Stationery for April	244 15
20	Ann Furlong	Scrubbing offices	9 75
31	Catharine Graham	Washing towels for May	20 00
31	Isabella Mackin	Scrubbing offices	6 75
June 4	W. Y. McAllister	Polarizing apparatus	15 00
4	D. Van Nostrand	Magazines	1 28
6	Walter Hawkes	Ice for May	37 28
8	Stephens & Co.	Sliding-rule scale	1 50
10	Washington and Georgetown Railroad Company.	Tickets for use of messengers	5 00
13	W. B. Moses	Matting, &c	185 35
15	Francis B. Mohun	Stationery for May	127 30
15	William S. Mitchell	Cotton	2 50
18	George C. Maynard	Stencil papers	1 00
30	Francis B. Mohun	Stationery	2 43
30	Isabella Mackin	Scrubbing offices	6 75
30	Catharine Graham	Washing towels for June	20 00
30	M. W. Galt, Bro. & Co	Repairing clock	3 00
30	J. W. Sheckells	Repairing locks	1 50
30	Walter Hawkes	Ice for June	39 40
			8,000 00
	Amount appropriated		8,000 00
	Amount expended		8,000 00

OFFICE PAYMASTER-GENERAL.

1880.			
July 21	Army and Navy Journal	Subscription, 1 year	\$6 00
Aug. 3	Charles H. Earl	Livery of horses, July	50 00
24	Western Union Telegraph Company	Official telegrams	7 43
31	Daniel Shannon	Car-tickets for use of messengers	5 00
Sept. 2	Charles H. Earl	Livery of horses, August	40 00
9	Joseph S. Ball	Mileage tables for use of office	55 00
16	Western Union Telegraph Company	Official telegrams	17 42
18	Francis B. Mohun	Stationery	39 25
18	Atlantic and Pacific Telegraph Co.	Official telegrams	5 51
30	M. A. Loveless	Washing towels	25 00
30	Charles H. Earl	Livery of horses, September	40 00
30	H. L. Pelouze & Son	Printing materials	216 50
Oct. 16	Mantz & Co	Repairing harness	12 50
16	W. H. Nalley	Binders	3 50
22	Francis B. Mohun	Stationery	21 25
28	Western Union Telegraph Company	Official telegrams	10 27
29	John Lockie	Official Directory	5 00
30	W. H. Nalley	Binders	2 50
Nov. 3	Charles H. Earl	Livery of horses, October	40 00
8	John McDermott & Bro	Repairing mail-wagon	52 25
11	A. Williams & Co	Book, office library	5 33
18	T. H. S. Hamersly	Books, office library	20 00
18	Atlantic and Pacific Telegraph Co.	Official telegrams	2 22
Dec. 2	Charles H. Earl	Livery of horses, November	40 00
4	Western Union Telegraph Company	Official telegrams	6 27
21	G. N. Rider	Books, office library	9 00
28	Western Union Telegraph Company	Official telegrams	16 51
31	M. A. Loveless	Washing towels	25 00
31	Charles H. Earl	Livery of horses, December	40 00
31	Boyd's Directory Company	City directories	16 00
31	Mantz & Co	Repairing harness	15 50
31	L. R. Hamersly & Co.	Magazine, subscription	5 00
1881.			
Jan. 8	Daniel Shannon	Book, office library	1 25
15	W. H. Nalley	Binders	6 00
27	Francis B. Mohun	Stationery	60 01
28	Western Union Telegraph Company	Official telegrams	4 43
Feb. 5	Charles H. Earl	Livery of horses, January	40 00
5	H. L. Pelouze & Son	Printing materials	29 65
16	William C. Bryant & Co.	Subscription to Engineering Post	9 00
16	Daniel Shannon	Car-tickets for use of messengers	5 00
Mar. 7	Charles H. Earl	Livery of horses, February	40 00
31	do	Livery of horses, March	40 00
31	M. A. Loveless	Washing towels	25 00

OFFICE PAYMASTER-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1881.			
Mar. 31	W. H. Nalley	Binders	\$4 50
Apr. 9	Francis B. Mohun	Stationery, January	20 85
9	do	Stationery, February	40 90
9	do	Stationery, March	53 00
13	City post-office	Deficient postage	1 04
21	H. L. Pelouze & Son	Printing materials	19 20
May 3	Atlantic and Pacific Telegraph Co.	Official telegrams	2 61
3	do	do	2 05
3	George Cartner	Book, office library	6 00
4	Charles H. Earl	Livery of horses, April	40 00
4	Western Union Telegraph Company	Official telegrams, January	11 35
4	do	Official telegrams, February	2 61
4	do	Official telegrams, March	18 83
9	Francis B. Mohun	Stationery	91 25
13	Mantz & Co	Harness, horses of mail-wagon	77 00
14	W. H. Nalley	Binders	7 50
June 3	Charles H. Earl	Livery of horses, May	40 00
6	Western Union Telegraph Company	Official telegrams, April	15 15
10	J. McDermott & Bros	Repairing mail-wagon	2 75
15	Francis B. Mohun	Stationery	457 17
18	H. L. Pelouze & Son	Printing materials	80 47
22	L. R. Hamersly & Co	Books, office library	6 00
24	W. H. Nalley	Repairing books	47 50
30	Charles H. Earl	Livery of horses, June	40 00
30	Mary A. Loveless	Washing towels	25 00
30	John Lockie	Official Directory	2 50
30	Francis B. Mohun	Stationery	209 51
30	City post-office	Deficient postage	2 53
30	Western Union Telegraph Company	Official telegrams, May	15 90
30	do	Official telegrams, June	3 19
			2,500 00
	Amount appropriated		2,500 00
	Amount expended		2,500 00

OFFICE COMMISSARY-GENERAL.

1880.			
July 13	J. M. Judd	Book, office library	\$3 00
15	Hoce, Bro. & Co	Carpets, mats, &c	57 91
17	Army and Navy Journal	One year's subscription	6 00
29	W. H. & O. H. Morrison	Book, office library	5 00
31	Jane E. Strother	Washing towels, July	4 00
Aug. 6	F. D. Lewis, attorney	Rent for July	208 34
9	Washington Gas Company	Gas for July	2 20
20	H. Baumgarten	Red ink for stamps	6 00
23	F. B. Mohun	Stationery	40 20
28	James Fitzpatrick	Plastering	8 00
31	F. D. Lewis, attorney	Rent for August	208 34
31	Jane E. Strother	Washing towels, August	4 00
Sept. 6	Washington Gas Company	Gas for August	2 40
14	Lient. E. W. Very, U. S. N.	Book, office library	7 50
25	Collins, Ward & Cunningham	Repairing office stools	37 00
27	Francis B. Mohun	Stationery	66 00
29	E. W. Woodruff	File-holders	82 60
30	F. D. Lewis, attorney	Rent for September	208 32
30	Jane E. Strother	Washing towels, September	4 00
30	Washington Gas Company	Gas for September	3 80
30	American District Telegraph Company	Rent of instrument	7 95
30	Murray & Barker	Shoeing horses	13 50
30	Chas. Fischer	Paper folder	1 50
30	Fred. A. Fill	New York Times	3 75
30	Jesse F. Mann	Subscription to Post	1 50
30	L. H. Schneider & Co.	Hardware	22 24
30	Wm. H. Douglas	Spring stop-cocks	2 50
Oct. 30	Great Falls Ice Company	Ice	23 13
8	H. Jacobs	Aluminum pens	15 00
9	Mayfield & Hieston	Coal and wood	146 00
9	Wm. McLean	Lumber for office use	95 84
22	W. W. Farr	Repairing clock	2 00
30	F. D. Lewis, attorney	Rent for October	208 34
30	Jane E. Strother	Washing towels, October	4 00
Nov. 5	James E. Miller	Wood	6 25
6	Washington Gas Company	Gas for October	5 80
8	T. H. S. Hamersly	Books for library	11 00

OFFICE COMMISSARY-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1880.			
Nov. 17	L. R. Hamnerly & Co	Magazines	\$2 50
30	F. D. Lewis, attorney	Rent for November	208 32
30	G. N. Sullivan	Books, office library	8 00
Dec. 4	Jane E. Strother	Washing towels, November	4 00
7	Washington Gas Company	Gas for November	7 00
10	Army and Navy Journal	Back numbers of Journal	2 00
10	Martin & Butler	Paints, oils, &c.	11 10
16	W. T. Jones	Subscription American Grocer	1 00
27	Hoe, Bro. & Co.	Rugs, &c.	50 44
31	F. D. Lewis, attorney	Rent for December	208 34
31	Jane E. Strother	Washing towels, December	4 00
31	Jesse F. Mann	Subscription to Post	1 50
31	James L. Harmon	Subscription to Baltimore Sun	3 30
31	Fred. A. Fill	Subscription to New York Times	3 75
31	Murray & Barker	Shoeing horses	12 75
31	Mantz & Co.	Repairing harness	12 50
31	Great Falls Ice Company	Ice	18 43
31	Washington Gas Company	Gas, for December	7 50
31	American District Telegraph Company	Rent of instrument	5 25
31	George Watts	Cedar pails	1 25
31	do	Brooms	1 50
31	J. Fallon	Subscription, Republican	3 00
31	James E. Miller	Wood	7 75
31	William McLean	Lumber, office use	53 12
1881.			
Jan. 8	William H. Boyd	City directories	5 00
21	L. R. Hamnerly & Co	Book, office library	10 00
24	L. H. Schneider & Co.	Hardware	14 75
31	F. D. Lewis, attorney	Rent, for January	208 34
31	Jane E. Strother	Washing towels, January	4 00
31	Martin & Butler	Paints, oil, &c.	7 46
Feb. 1	D. Van Ness Person	Subscription, Produce Exchange	4 00
2	Francis B. Mohn	Stationery	150 63
5	W. D. Wyvill	Setting furnace governor	3 00
7	Washington Gas Company	Gas, for January	9 00
12	Houghton, Mifflin & Co.	Postal Guides	1 50
25	Francis B. Mohn	Stationery	84 00
28	Jane E. Strother	Washing towels, February	4 00
28	Amelia Lewis	Subscription, Food and Health	3 00
Mar. 1	F. D. Lewis, attorney	Rent, for February	208 32
8	Washington Gas Company	Gas, for February	6 40
8	H. H. Douglas	Force pump	22 50
9	Capt. W. H. Bell, C. S.	Soap	3 22
9	John A. Baker	Clover seed	1 00
10	Johnson Bros	Wood and coal	37 00
10	E. Cruse	Life Studies of the Army	25 00
10	E. T. Redmon	Soil and gravel	18 00
12	Charles J. Weston	Book, office library	4 00
31	F. D. Lewis, attorney	Rent, for March	208 34
31	F. A. Fill	Subscription, New York Times	3 75
31	Murray & Barker	Shoeing horses	15 50
31	American District Telegraph Company	Rent of instrument	5 75
31	Great Falls Ice Company	Ice	15 75
31	J. Fallon, agent	Subscription, Republican	1 50
31	L. H. Schneider	Hardware	17 42
31	Jane E. Strother	Washing towels, March	4 00
31	Washington Gas Company	Gas for March	5 00
31	Mantz & Co.	Repairing harness	8 10
Apr. 9	Francis B. Mohn	Stationery	98 15
9	William McLean	Lumber, office use	5 56
11	Lutz & Bro	Harness	37 00
16	Ward & Cunningham	Putting up stoves	6 75
18	Jesse F. Mann	Subscription, Post	1 50
26	George Watts	Dusters, &c.	10 25
27	National Railway Publishing Company	Subscription, Traveler's Guide	6 67
30	Lucy A. Strother	Washing towels, April	4 00
30	Francis D. Lewis, attorney	Rent, for April	208 32
May 6	Washington Gas Company	Gas, for April	3 34
7	E. W. Woodruff	File-holders	100 00
9	Francis B. Mohn	Stationery	78 75
14	R. C. M. Burton	Repairing awnings	28 75
17	J. C. Breckenridge	Horse for mail-wagon	100 00
17	B. F. Brown	Dating-stamps	14 00
23	L. Cooper	Whitewashing	16 00
25	Capt. W. H. Bell, C. S.	Soap	4 22
26	Hoe, Bro. & Co	Carpets, &c.	39 75
31	F. D. Lewis, attorney	Rent for May	208 34
31	George Watts	Ice-chest	13 25
June 3	Lucy A. Strother	Washing towels, May	4 00
6	R. Henderson	Window-shade	2 00

OFFICE COMMISSARY-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1881.			
June 7	Washington Gas Company	Gas for May	\$2 80
7	Johnson Bros	Wood and coal	40 24
11	George R. Herrick	Mackinnon pens	27 00
13	Robert Jones	Books, office library	12 00
13	George Watts	Dusters, brooms, &c.	24 20
18	John Danner	Revolving book-case	31 24
21	C. G. Thorn	Repairing water-pipes	183 05
22	L. R. Hamersly & Co	Book, office library	5 00
23	J. Lansburgh	Carpets, mats, &c.	234 61
24	Mantz & Co	Harness, &c.	112 25
25	Ward & Cunningham	Cleaning furnace	2 00
29	Martin & Butler	Varnish	29 15
29	Murray & Barker	Shoeing horses	10 00
29	J. Baumgarten	Rubber stamp	2 50
29	L. H. Schneider	Hardware	20 49
29	W. M. McLean	Lumber, office use	36 06
30	James L. Harmon	Subscription, Baltimore Sun	3 30
30	Lucy A. Strother	Washing towels	4 00
30	F. A. Fill	Subscription, New York Times	3 75
30	F. D. Lewis, attorney	Rent for June	208 83
30	F. J. Papet	Subscription, Republican	1 50
30	American District Telegraph Company	Rent of instrument	5 70
30	Great Falls Ice Company	Ice	9 81
30	Washington Gas Company	Gas for June	2 80
30	W. M. Chandler	Subscription, Post	1 50
30	James B. Lambie	Desk cloth	20 37
30	Francis B. Mohun	Stationery	182 55
			5,500 00
	Amount appropriated		5,500 00
	Amount expended		5,500 00

OFFICE CHIEF OF ENGINEERS.

1880.			
July 14	Washington and Georgetown Railroad Company	Car-tickets for use of messengers	\$10 00
16	Army and Navy Journal	Subscription, one year	6 00
29	William H. Smith	Washing office-windows	14 00
31	Adolphus Adams	Cleaning rooms	10 00
31	Elizabeth Denham	Washing towels	5 00
Aug. 3	J. L. Smith	Map-rollers	5 50
28	W. H. Smith	Scrubbing offices	3 50
31	Adolphus Adams	Cleaning rooms	10 00
31	Elizabeth Denham	Washing towels	5 00
31	E. W. Woodruff	File-holders	10 00
Sept. 4	M. M. Magruder	Map-cases, &c.	125 85
13	Washington and Georgetown Railroad Company	Car-tickets for use of messengers	10 00
24	A. R. Lycett	Portfolio	8 00
27	Francis B. Mohun	Stationery	232 28
30	Adolphus Adams	Cleaning rooms	10 00
30	Elizabeth Denham	Washing towels	5 00
30	Ruth A. Thompson	do	15 00
30	Barker Bros	Ice	21 72
30	Robert Sillers	Freight, telegrams, &c	10 34
30	William Hounschild	Paste for maps, &c	6 75
30	Western Union Telegraph Company	Official telegrams	6 44
30	Adams Express Company	Freight on government parcels	6 75
30	W. W. Bonnette & Co	Cotton and cambric	6 71
30	F. Schneider & Son	Hardware	11 40
Oct. 22	Francis B. Mohun	Stationery	60 85
22	do	Books, office library	13 00
22	Loren Rice	Cleaning carpets	15 64
29	John Lockie	Official directories	10 00
30	Adolphus Adams	Cleaning rooms	10 00
30	Elizabeth Denham	Washing towels	5 00
30	T. H. S. Hamersly	Book, office library	8 00
Nov. 2	James P. McGrann	Laying carpets	32 05
22	Washington and Georgetown Railroad Company	Tickets for use of messengers	10 00
26	M. M. Magruder	Carpentry	21 00
30	Adolphus Adams	Cleaning offices	10 00
30	Elizabeth Denham	Washing towels	5 00
30	F. W. Christern	Books, office library	4 25
Dec. 4	R. H. Boswell & Co	Repairing furniture	24 75
7	H. Baumgarten	Stamp-ribbons	6 25
10	J. L. Harmon	Subscription, Baltimore Sun	3 30

OFFICE CHIEF OF ENGINEERS—Continued.

Date.	To whom paid.	On what account.	Amount.
1880.			
Dec. 11	A. H. Chace & Bro.	Cleaning carpets	\$11 61
14	E. W. Woodruff	File-boxes	9 00
21	J. F. W. Dorman	Rubber stamp	4 50
30	M. M. Magruder	Pine case for files	30 00
31	Elizabeth Denham	Washing towels	5 00
31	Ruth A. Thompson	do.	15 00
31	Adolphus Adams	Cleaning rooms	10 00
31	W. W. Burdette & Co.	Towels	20 00
31	Barker Bros.	Ice	19 75
31	Baldwin Bros.	Map-rollers	9 00
31	Keuffel & Esser	Drawing materials	7 44
31	Wheatley Bros.	Lumber, office use	12 70
31	J. F. Mann	Subscription, Post	3 00
31	M. M. Magruder	Hanging map-case	4 00
31	George Hill, jr.	Paper-wrappers	4 06
31	Robert Sillers	Freight, telegrams, &c.	7 72
31	William Hounschild	Paste for maps	6 75
31	F. Schneider & Son	Hardware	9 21
31	M. W. Beveridge	Basin and jar	3 25
31	Western Union Telegraph Company	Official telegrams	8 28
31	E. Morrison	Flat paper	12 05
31	H. L. Pelouze & Son	Printing materials	174 48
31	Public Printer	Congressional Record	3 40
1881.			
Jan. 17	Washington and Georgetown Railroad Company	Tickets for use of messengers	10 00
20	W. H. Boyd	City Directories	30 00
21	John H. Magruder	Soap	16 26
22	Houghton, Mifflin & Co.	Postal Guides	11 55
29	M. M. Magruder	Cases for papers	24 75
31	Adolphus Adams	Cleaning rooms	10 00
31	Elizabeth Denham	Washing towels	5 00
31	E. W. Woodruff	File-holders	25 00
Feb. 2	Robert H. Davis	Repairing chairs	5 25
8	W. B. Moses & Son	Office furniture	38 50
14	Washington and Georgetown Railroad Company	Tickets for use of messengers	10 00
28	Adolphus Adams	Cleaning rooms	10 00
28	Elizabeth Denham	Washing towels	5 00
Mar. 14	Public Printer	Books, use of office	4 65
19	Francis B. Mohn	Stationery	427 47
19	do.	Books, office library	15 75
20	M. M. Magruder	File-cases and flooring	64 00
31	Robert Sillers	Freight, telegrams, &c.	2 95
31	Adams Express Company	Freight on government parcels	2 95
31	Adolphus Adams	Cleaning rooms	10 00
31	Ruth A. Thompson	Washing towels	15 00
31	Elizabeth Denham	do.	5 00
31	Washington and Georgetown Ice Co.	Ice	19 25
31	Baldwin Bros.	Map-rollers	7 50
31	W. W. Burdette & Co.	Cotton and oil-cloth	30 64
31	E. Morrison	Paper	3 18
31	F. Schneider & Son	Hardware	4 95
31	H. L. Pelouze & Son	Printing materials	14 00
31	H. Baumgarten	Altering stamp	5 00
Apr. 11	Washington and Georgetown Railroad Company	Tickets for use of messengers	10 00
11	F. W. Christern	Books, office library	11 00
16	John H. Magruder	Brooms, soap, &c.	16 77
30	Adolphus Adams	Cleaning rooms	10 00
30	Elizabeth Denham	Washing towels	5 00
30	Carnough & Walsh	Painting, &c.	9 75
May 4	J. Baumgarten	Dating-stamp	12 50
14	Maurice Joyce	Engraving	3 00
21	Rand, McNally & Co.	Atlas	12 00
31	Adolphus Adams	Cleaning rooms	10 00
31	Elizabeth Denham	Washing towels	5 00
31	Francis B. Mohn	Stationery	122 70
31	do.	Books, office library	14 50
31	Wheatley Bros.	Lumber, office use	45 12
31	Edward Craig	Taking up carpets	18 00
31	J. F. Spelsbourne	Walnut frames	4 50
June 11	E. W. Woodruff	File-boxes	8 00
23	George Jones	Cleaning windows	28 00
30	Elizabeth Denham	Washing towels	5 00
30	Ruth A. Thompson	do.	15 00
30	James L. Harmon	Subscription, Baltimore Sun	2 30
30	Adolphus Adams	Cleaning rooms	10 00
30	M. W. Beveridge	Spittoons	4 50
30	Washington and Georgetown Ice Co.	Ice	18 48

OFFICE CHIEF OF ENGINEERS—Continued.

Date.	To whom paid.	On what account.	Amount.
1881.			
June 20	John H. Magruder.....	Office furnishings.....	\$14 70
30	F. Schneider & Son.....	Hardware.....	5 87
30	Charles Haerle.....	Tickets for use of messengers.....	5 49
30	Robert Sillers.....	Freight, telegrams, &c.....	7 27
30	Francis B. Mohun.....	Stationery.....	20 41
			2,500 00
	Amount appropriated.....		2,500 00
	Amount expended.....		2,500 00

OFFICE CHIEF OF ORDNANCE.

1880.			
July 8	Journal of Commerce.....	Subscription.....	\$2 00
16	W. C. & F. P. Church.....	Subscription, Army and Navy Journal.....	12 00
20	E. Hudson.....	Subscription, Army and Navy Register.....	3 00
Aug. 9	Chapin & Gould.....	Books, office library.....	250 00
9	John Wiley & Sons.....	do.....	375 25
12	E. W. Woodruff.....	File-boxes.....	120 00
18	Francis B. Mohun.....	Stationery.....	103 25
18	do.....	do.....	90 00
30	Barker Bros.....	Ice.....	18 38
30	John M. Smith.....	Washing towels.....	18 00
Oct. 6	H. Jacobs.....	Aluminum pens.....	7 50
30	T. H. S. Hamersly.....	Book, office library.....	8 00
Nov. 11	A. Williams & Co.....	do.....	5 33
15	P. M. Kennerly.....	Army Portfolio.....	5 00
19	Francis B. Mohun.....	Stationery, October.....	99 75
19	do.....	Stationery, November.....	32 73
Dec. 7	T. H. S. Hamersly.....	Books for Ordnance Corps.....	150 00
21	Francis B. Mohun.....	Stationery.....	50 00
31	Barker Bros.....	Ice.....	16 67
31	John M. Smith.....	Washing towels.....	18 00
1881.			
Jan. 8	W. H. Boyd.....	City Directory.....	5 00
27	Francis B. Mohun.....	Stationery.....	28 80
29	William S. Mitchell.....	Laying carpets.....	32 50
Feb. 25	Francis B. Mohun.....	Stationery.....	48 00
Mar. 31	Barker Bros.....	Ice.....	10 53
June 30	Francis B. Mohun.....	Stationery.....	5 31
			1,500 00
	Amount appropriated.....		1,500 00
	Amount expended.....		1,500 00

OFFICE MILITARY JUSTICE.

1880.			
July 7	Thomas Washington.....	Shaking carpets.....	\$1 59
9	Luttrell & Wine.....	Towels.....	15 75
10	G. N. Rider.....	Book, office library.....	8 00
13	R. H. Davis.....	Repairing furniture.....	5 00
21	George Watts.....	Furniture.....	5 65
27	Army and Navy Register.....	Subscription.....	1 50
29	R. P. Barnes.....	Shaking carpets.....	2 50
Aug. 9	Washington and Georgetown Railroad Company.....	Tickets for use of messengers.....	5 00
19	Spencer C. Jones.....	Book, office library.....	4 00
21	Francis B. Mohun.....	Stationery.....	82 00
31	John Tennyson.....	Washing towels.....	4 62
Sept. 18	Francis B. Mohun.....	Stationery.....	27 75
30	Barker Bros.....	Ice.....	9 41
30	William Noell.....	Repairing blind.....	2 00
30	F. Schneider & Son.....	Hardware.....	8 45
Oct. 6	H. Jacobs.....	Aluminum pens.....	2 50
7	Thomas Washington.....	Laying carpets.....	2 00
26	Francis B. Mohun.....	Stationery.....	81 00
26	O. L. Burger.....	Repairing clock.....	1 50
Nov. 2	J. F. Sanner.....	Repairing furniture.....	6 00
5	T. H. S. Hamersly.....	Books, office library.....	10 00
Dec. 24	John Tennyson.....	Washing towels.....	7 23
30	Robert H. Davis.....	Repairing furniture.....	6 00
31	George M. Schaefer.....	Window-shades.....	32 00
31	Western Union Telegraph Company.....	Official telegrams.....	4 33

H. Ex. 11—2

OFFICE MILITARY JUSTICE—Continued.

Date.	To whom paid.	On what account.	Amount.
1880.			
Dec. 31	Barker Bros	Ice	\$6 7
31	W. H. Boyd	City Directory	5 00
1881.			
Jan. 12	F. Schneider & Son	Spittoons	10 00
13	Washington Law Reporter	Subscription	3 00
27	Francis B. Mohun	Stationery	32 50
Feb. 4	Charles F. Reade	Book, office library	4 25
8	Treasury Department	File-boards	15 00
24	W. C. & F. P. Church	Subscription, Army and Navy Journal	6 00
28	Francis B. Mohun	Stationery	23 50
Mar. 8	Samuel K. Brown	Slop-jar	1 40
25	H. Baumgarten	Stamp-ribbon	1 00
31	Luttrell & Wine	Soap	3 00
31	John Tennyson	Washing towels	5 00
Apr. 8	Washington and Georgetown Ice Co.	Ice	7 25
9	Francis B. Mohun	Stationery	47 50
11	L. R. Hamersly & Co.	Magazine, subscription	5 00
12	F. Schneider & Son	Dusters, baskets, &c.	3 50
12	R. P. Barnes	Hauling	2 00
May 4	Western Union Telegraph Company	Official telegrams	1 75
28	Thomas Washington	Shaking carpets	6 00
31	H. H. Hempler	Magnifying glass	5 00
June 2	Edward Dillon	Carpentry	20 10
7	Western Union Telegraph Company	Official telegrams	1 25
24	W. H. & O. H. Morrison	Book, office library	6 00
30	F. Schneider & Son	Hardware	2 60
30	Knickerbocker Ice Company	Ice	4 25
			500 00
	Amount appropriated		500 00
	Amount expended		500 00

WAR DEPARTMENT BUILDING.

1880.			
July 10	A. Hahl & Co.	Repairing electric bell	\$36 45
16	Wm. O. Avery	Rubber hose and couplings	372 00
20	Otis Brothers & Co.	Crank-pin, &c., for engine	25 00
23	H. C. James	Labor, storing coal	13 12
30	J. W. Boteler & Sons	Hair sweeps, &c.	155 25
31	Catharine Nichols	Labor, cleaning offices	15 00
Aug. 2	Symonds, Hodge & Co.	Lubricant for engines and elevators	15 00
3	John D. Leonard	Tags for library cases	11 50
9	Washington Gas Co.	Gas for July	26 20
12	W. W. Rapley	Rebuilding fire-boxes	50 00
13	Great Falls Ice Company	Ice for July	46 40
14	Johnson Bros.	Wood and coal	768 85
19	G. M. Wight	Office furniture	562 00
30	Geo. W. Chamberlen	Painting, &c.	22 67
30	John Jebb	Storing fuel	6 50
31	Catharine Nichols	Labor, cleaning offices	15 00
Sept. 1	Wm. O. Avery	Rubber hose and couplings	250 00
2	J. W. McKnight	Picture rods and hangings	5 00
4	Wilhelm & Neumann	do	30 43
6	Washington Gas Company	Gas for August	29 40
11	Great Falls Ice Company	Ice for August	41 35
16	John Fitzgerald	Cutting out vault-door	25 00
16	A. R. Johnson	Easing doors	14 50
16	Catharine Nichols	Labor, cleaning offices	15 00
16	Joseph H. Harris	Labor during month	50 00
16	Washington Gas Company	Gas for September	38 20
16	Great Falls Ice Company	Ice for September	37 00
Oct. 7	W. W. Rapley	Repairing steam-heaters	119 75
8	John A. Power	Gas-governor	397 00
8	Wm. O. Avery	Hose-couplings	19 00
16	Bartlett, Hayward & Co.	Repairing boiler	46 66
30	A. R. Johnson	Carpentry during month	50 00
30	Joseph H. Harris	Labor during month	50 00
30	Louis Koorth	Cleaning ash-vaults and hauling ashes and debris	42 00
Nov. 2	Great Falls Ice Company	Ice for October	29 45
6	Washington Gas Company	Gas for October	40 00
6	J. W. Boteler & Son	Sponges, spittoons, &c.	112 35
10	Telfair, Snedeker & Rucker	Cylinder oil	65 00
19	Johnson Bros.	Wood	41 25
19	Henry Klotz	Labor	30 00
20	Wm. S. Mitchell	Carpets, mats, &c.	125 46

WAR DEPARTMENT BUILDING—Continued.

Date.	To whom paid.	On what account.	Amount.
1880.			
Nov. 23	John Jebb	Sawing oak wood	\$11 50
27	M. R. Thorp	Laborers, removing snow	5 50
30	Joseph H. Harris	Labor during month	50 00
30	Geo. M. Shaefer	Fitting and laying carpets	175 25
Dec. 3	Great Falls Ice Company	Ice for November	20 25
7	Washington Gas Company	Gas for November	58 80
10	M. R. Thorp	Labor storing fuel	6 27
15	Wm. S. Mitchell	Carpets, towels, &c.	188 75
17	Robt. Leitch & Sons	Plumber's work and material	23 30
22	M. R. Thorp	Laborers, removing snow	10 20
27	do	do	14 20
30	do	do	13 70
31	A. R. Johnson	Carpentry during month	50 00
31	Joseph H. Harris	Labor during month	50 00
31	Great Falls Ice Company	Ice during month	18 60
31	Washington Gas Company	Gas during month	83 80
31	W. W. Rapley	Coal-hods, &c.	39 00
31	Louis Koerth	Cleaning out ash-vaults and hauling away debris	18 75
1881.			
Jan. 3	M. R. Thorp	Laborers, removing snow	8 30
12	do	do	24 20
19	Johnson Bros	Coal	505 60
28	E. E. Jackson & Co.	Select lumber	51 00
28	J. C. Newton	Painting, glazing, &c.	205 30
28	A. W. Hodgman	Labor	11 25
31	Joseph H. Harris	Labor during month	50 00
Feb. 2	M. R. Thorp	Laborers, removing snow	15 60
3	Great Falls Ice Company	Ice for January	17 35
4	Royce & Marcan	Repairing electric bells	5 00
7	Washington Gas Company	Gas for January	65 60
10	Bartlett, Hayward & Co.	Repairing heating apparatus	1 08
21	Louis Koerth	Cleaning out ash-vaults and basements and hauling away ashes and debris	106 50
28	Joseph H. Harris	Labor during month	50 00
28	A. R. Johnson	Carpentry during month	50 00
Mar. 7	M. R. Thorp	Laborers, removing snow	8 60
8	Washington Gas Company	Gas for February	78 80
8	Pay-roll—undry persons	Temporary labor	48 75
15	Great Falls Ice Company	Ice for February	13 84
31	Joseph H. Harris	Labor during month	50 00
31	Great Falls Ice Company	Ice during month	15 08
31	F. Schneider & Son	Hardware	194 57
31	Washington Gas Company	Gas for March	59 80
Apr. 28	H. Semken	Pitcher and waiter	31 06
30	A. R. Johnson	Carpentry during month	50 00
30	Joseph H. Harris	Labor during month	50 00
May 3	Johnson Bros	Coal	216 00
6	Washington Gas Company	Gas for April	65 80
18	Great Falls Ice Company	Ice for April	10 93
31	Washington Gas Company	Gas for May	40 20
June 8	Great Falls Ice Company	Ice for May	15 48
15	Wm. S. Mitchell	Cleaning carpets	62 86
30	Great Falls Ice Company	Ice for June	18 38
30	Washington Gas Company	Gas for June	41 60
30	J. W. Boteler & Son	Hair sweeps, brooms, &c.	80 24
			7,000 00
	Amount appropriated		7,000 00
	Amount expended		7,000 00

BUILDING ON F STREET.

1880.			
Aug. 9	Washington Gas Company	Gas for July	\$12 20
20	William W. Farr	Clock	12 00
Sept. 6	Washington Gas Company	Gas for August	12 80
30	do	Gas for September	16 80
30	American District Telegraph Company	Rent of instrument	21 00
30	J. M. York	Furniture	25 00
30	National Capital Telephone Company	Rent of instruments	12 50
Oct. 13	Great Falls Ice Company	Ice for quarter	78 75
29	S. J. Haislett	Taking down awnings	8 15
Nov. 6	Washington Gas Company	Gas for October	18 00
6	E. W. Barker	Furniture	126 75
10	E. W. Reed's Sons	Coaline	11 50
11	E. H. Smith	Gong	5 00
Dec. 7	Washington Gas Company	Gas for November	20 80
17	Singleton & Hoeks	Linoleum	111 57
17	J. M. York	Boxes	18 50
31	William W. Farr	Repairing clocks	12 50
31	National Capital Telephone Company	Rent of instruments	12 50

BUILDING ON F STREET—Continued.

Date.	To whom paid.	On what account.	Amount.
1890.			
Dec. 31	Great Falls Ice Company.	Ice for quarter.	\$65 75
31	Washington Gas Company.	Gas for December.	23 00
31	American District Telegraph Company.	Rent of instruments.	21 00
31	J. W. Boteler & Son.	Water-pitcher and stand.	33 75
1891.			
Jan. 13	Charles G. Ball.	Stoves, &c.	37 75
27	Francis B. Mohun.	Letter-baskets.	16 00
Feb. 7	Washington Gas Company.	Gas for January.	21 00
17	Singleton & Hoeke.	Oil-cloth.	60 98
Mar. 3	F. Aldridge.	Flags.	16 50
7	R. W. Barker.	Furniture.	111 00
8	Washington Gas Company.	Gas for February.	18 00
10	C. G. Thorn.	Plumbing and materials.	292 44
10	B. W. Reed's Sons.	Hauling ashes.	13 13
12	C. Macnichol.	Painting, &c.	74 75
22	E. H. Smith.	Repairing bell.	1 50
26	Milne & Proctor.	Furniture.	34 00
31	Washington Gas Company.	Gas for March.	21 20
31	American District Telegraph Company.	Rent of instruments.	21 00
Apr. 6	Great Falls Ice Company.	Ice for quarter.	50 25
19	National Capital Telephone Company.	Rent of instruments.	12 50
May 6	Washington Gas Company.	Gas for April.	24 40
6	do.	Gas-heating stoves.	9 87
25	William Rutherford.	Glazing.	1 25
28	James M. York.	Packing-boxes.	15 00
28	R. W. Barker.	Furniture.	203 92
June 7	Washington Gas Company.	Gas for May.	17 60
8	S. J. Haislett.	Covering awnings.	18 10
15	Francis B. Mohun.	Stationery.	55 75
16	Singleton & Hoeke.	Matting.	146 75
16	Dennis Reilley.	Kiudling-wood.	30 00
18	Patrick Gaskins.	Storing fuel.	36 00
18	J. W. Boteler & Son.	Spittoons.	15 00
20	L. H. Schneider.	Scales.	32 05
22	R. W. Barker.	File-boards.	115 12
23	William H. Dunn.	Furniture.	222 50
23	Johnson Bros.	Fuel.	701 50
28	John W. Drew.	Sponge, &c.	39 80
28	Charles G. Ball.	Repairing grates.	80 00
30	Knickerbocker Ice Company.	Ice for quarter.	24 82
30	W. W. Farr.	Repairing clocks.	12 50
30	National Capital Telephone Company.	Rent of instruments.	12 50
30	American District Telegraph Company.	do.	21 00
30	C. G. Thorn.	Fire-buckets.	97 00
30	Lorenzo Rice.	Cleaning carpets.	33 32
30	B. W. Reed's Sons.	Soap, &c.	29 64
30	Washington Gas Company.	Gas for June.	16 80
			3,500 00
Amount appropriated.			3,500 00
Amount expended.			3,500 00

BUILDING CORNER SEVENTEENTH AND F STREETS.

1890.			
July 23	William S. Mitchell.	Matting.	\$358 97
31	Adolphus Adams.	Labor during July.	40 00
Aug. 2	Telfair, Snedecker & Rucker.	Cylinder oil.	12 00
9	Washington Gas Company.	Gas for July.	13 40
14	Johnson Bros.	Coal.	1,215 30
20	John H. Brown.	Calclmining walls.	125 00
30	Estate of G. W. Chamberlen, deceased.	Painting, &c.	633 50
31	Adolphus Adams.	Labor for August.	40 00
Sept. 6	Washington Gas Company.	Gas for August.	11 40
30	Adolphus Adams.	Labor for September.	40 00
30	Washington Gas Company.	Gas for September.	12 20
30	Barker Bros.	Ice.	5 20
30	H. W. Cockrill.	Charcoal.	19 20
30	James H. Byram.	Carpentry.	391 00
30	G. C. Shaw.	Papering offices.	203 00
30	James Tindall.	Grease for engines.	4 00
30	F. Schneider & Son.	Hardware.	116 20
30	Thomas Somerville.	Gas and steam fitting.	20 00
Oct. 14	R. A. Phillips.	Window-cords.	15 00
15	Johnson Bros.	Wood.	26 50
15	John H. Brown.	Calclmining.	16 00
20	Pettit & Driggs.	Repairing steam-engines.	360 00
30	Adolphus Adams.	Labor for October.	40 00

CONTINGENT EXPENSES OF THE WAR DEPARTMENT.

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BUILDING CORNER SEVENTEENTH AND F STREETS—Continued.

Date.	To whom paid.	On what account.	Amount.
1880.			
Oct. 30	William S. Mitchell.....	Carpets.....	\$115 67
Nov. 6	Washington Gas Company.....	Gas for October.....	17 00
6	John A. Power.....	Plumbing and materials.....	49 60
6	J. C. Newton.....	Painting and glazing.....	309 77
8	William B. Moses.....	Fire-screen.....	11 00
12	Johnson Bros.....	Wood.....	16 62
19	A. P. McElroy.....	Frames for signs.....	7 50
30	Adolphus Adams.....	Labor for November.....	40 00
30	C. W. Sherwood.....	Window-ventilators.....	49 00
Dec. 7	Washington Gas Company.....	Gas for November.....	19 40
27	E. J. Smith.....	Walnut settees.....	25 00
31	Adolphus Adams.....	Labor for December.....	40 00
31	Patrick Fitzgerald.....	Removing snow.....	19 25
31	Barker Bros.....	Ice.....	5 52
31	Washington Gas Company.....	Gas for December.....	28 60
31	James Tindall.....	Grease for engine.....	8 38
31	Boyd's Directory Company.....	City Directories.....	10 00
1881.			
Jan. 8	John McLain.....	Repairing heating apparatus.....	20 25
8	G. W. Slough.....	do.....	20 25
15	William Thompson.....	Hauling rubbish.....	3 00
31	Adolphus Adams.....	Labor for January.....	40 00
Feb. 1	G. W. Slough.....	Labor on heating apparatus.....	18 00
2	C. Burlew.....	Repairing sewer.....	16 00
7	Washington Gas Company.....	Gas for January.....	34 20
8	Johnson Bros.....	Wood.....	98 00
19	W. W. Tupper & Co.....	Grate-bars.....	126 00
26	Charles G. Ball.....	Sewer-pipe.....	198 50
28	Adolphus Adams.....	Labor for February.....	40 00
Mar. 8	Washington Gas Company.....	Gas for February.....	25 40
10	James H. Byram.....	Window-sashes.....	35 75
12	F. Schneider & Son.....	Hardware.....	12 78
16	E. F. Simpson.....	Repairing stove.....	16 50
19	W. R. Bradley.....	Cutting foundation stone.....	8 50
24	Johnson Bros.....	Wood and coal.....	174 55
31	Adolphus Adams.....	Labor for March.....	40 00
31	Washington and Georgetown Ice Co.....	Ice.....	5 52
31	Patrick Fitzgerald.....	Removing snow.....	18 00
31	James Tindall.....	Grease for engine.....	6 38
31	Washington Gas Company.....	Gas for March.....	17 40
Apr. 16	M. M. Magruder.....	Locks and window-cords.....	5 50
30	Adolphus Adams.....	Labor for April.....	40 00
May 4	Johnson Bros.....	Coal and wood.....	186 96
6	Washington Gas Company.....	Gas for April.....	18 20
31	Adolphus Adams.....	Labor for May.....	40 00
June 7	Washington Gas Company.....	Gas for May.....	14 80
30	Adolphus Adams.....	Labor for June.....	40 00
30	Washington Gas Company.....	Gas for June.....	8 40
30	Washington and Georgetown Ice Co.....	Ice.....	5 46
30	Charles Chase.....	Hauling ashes.....	75 11
30	John A. Power.....	Plumbing.....	36 10
30	Thomas Somerville.....	Steam-fitting.....	92 72
30	F. Schneider & Son.....	Hardware.....	33 13
			6,000 00
	Amount appropriated.....		6,000 00
	Amount expended.....		6,000 00

ADJUTANT-GENERAL'S OFFICE, OLD NAVY BUILDING.

1880.			
July 10	William S. Mitchell.....	Carpets, mats, &c.....	\$119 07
Aug. 3	John D. Leonard.....	Window-hoods.....	70 75
5	M. R. Thorp.....	Labor, storing coal.....	11 94
9	Washington Gas Company.....	Gas for July.....	11 40
12	W. W. Rapley.....	Fire-buckets, &c.....	74 35
14	Johnson Bros.....	Wood and coal.....	500 90
30	George W. Chamberlen.....	Painting.....	18 00
30	John Jebb.....	Sawing wood.....	10 00
Sept. 6	Washington Gas Company.....	Gas for August.....	14 00
16	A. R. Johnson.....	Carpentry.....	30 00
29	Louis Koerth.....	Labor, cleaning, &c.....	20 80
30	A. R. Johnson.....	Carpentry.....	24 46
30	Joseph V. Riley.....	Labor.....	40 76
30	Washington Gas Company.....	Gas for September.....	19 00
30	W. W. Rapley.....	Grates, fire-backs, &c.....	268 75
Oct. 15	John Trumble.....	Charcoal.....	14 00
Nov. 6	Washington Gas Company.....	Gas for October.....	19 00

Date.	To whom paid.	On what account.	Amount.
1890.			
Nov. 30	A. R. Johnson.....	Carpentry.....	\$30 00
30	George M. Schaefer.....	Papering rooms.....	48 15
Dec. 7	Washington Gas Company.....	Gas for November.....	22 00
30	Louis Koerth.....	Labor, cleaning offices.....	14 15
31	Washington Gas Company.....	Gas for December.....	25 00
1891.			
Jan. 28	J. C. Newton.....	Painting and glazing.....	28 52
31	A. R. Johnson.....	Carpentry.....	50 00
Feb. 7	Washington Gas Company.....	Gas for January.....	30 00
Mar. 8	do.....	Gas for February.....	26 00
11	W. W. Rapley.....	Grates, water-tank, &c.....	263 00
31	A. R. Johnson.....	Carpentry.....	50 00
31	Louis Koerth.....	Labor, cleaning, &c.....	18 85
31	F. Schneider & Son.....	Fire-grate.....	8 00
31	Washington Gas Company.....	Gas for March.....	27 00
Apr. 13	William S. Mitchell.....	Matting, rugs, &c.....	177 75
May 3	Johnson Bros.....	Coal.....	223 00
6	Washington Gas Company.....	Gas for April.....	26 00
June 4	J. I. Atchison.....	Plumbing.....	108 15
7	Washington Gas Company.....	Gas for May.....	20 00
11	James B. Harrover.....	Repairing roof.....	5 00
30	Washington Gas Company.....	Gas for June.....	22 00
30	William S. Mitchell.....	Matting.....	68 85
30	J. W. Boettler & Sons.....	Dusters, brooms, &c.....	110 00
30	C. A. Schneider & Sons.....	Iron window-shutters.....	318 00
			3,000 00
	Amount appropriated (act June 15, 1890).....		2,000 00
	Amount appropriated (act March 3, 1891).....		500 00
	Amount appropriated for 1725 F street (act March 3, 1891).....		500 00
			3,000 00
	Amount expended.....		3,000 00

TEST OF METALS.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

A report by officers of the Ordnance Bureau on the test of metals.

JANUARY 5, 1882.—Referred to the Committee on Appropriations and ordered to be printed.

WAR DEPARTMENT,
Washington City, December 5, 1881.

The Secretary of War has the honor to transmit to the House of Representatives the report of tests of metals, for industrial and other purposes, made with the United States testing machine at the Watertown Arsenal during the past fiscal year; also the letter of the Chief of Ordnance accompanying the same.

The Chief of Ordnance invites attention to the following recommendations in this report which have his approval:

1st. That the law of June 20, 1878 (sundry civil bill), be so modified as to give the government the prior claim to the use of the machine for government work, or of general public interest. As the fact becomes more widely known that any citizen can have the use of the machine by paying the required cost of making tests, it may be that the government will eventually be deprived of its use entirely.

2d. That authority be given by Congress to apply the proceeds of sales of material injured in testing, to the procuring of new material for further tests.

The foregoing recommendations are approved and respectfully submitted with request for the favorable consideration of Congress.

In view of the valuable information contained in this report, it is respectfully recommended that it be printed.

ROBERT T. LINCOLN,
Secretary of War.

The SPEAKER
of the House of Representatives.

ORDNANCE OFFICE, WAR DEPARTMENT,
Washington, December 3, 1881.

SIR: I have the honor to transmit herewith the report of tests of metals, for industrial and other purposes, made with the United States

testing machine at the Watertown Arsenal, during the past fiscal year with recommendation that it be transmitted to Congress.

I respectfully invite attention to the following recommendations in this report which have my approval:

1st. That the law of June 20, 1878 (sundry civil bill), be so modified as to give the government the prior claim to the use of the machine for government work, or of general public interest. As the fact becomes more widely known that any citizen can have the use of the machine by paying the required cost of making tests, it may be that the government will eventually be deprived of its use entirely.

2d. That authority be given by Congress to apply the proceeds of sales of material injured in testing to the procuring of new material for further tests.

Much prominence is given in this report to tests made as to the resistance of thick cast-iron cylinders: three being lined with copper tubes one-tenth of an inch thick, three with wrought-iron tubes nine-tenths of an inch thick, and two with bronze tubes half an inch thick. Simple cast-iron cylinders were not tested.

Afterwards, to show the correspondence between the statical strains of the testing machine and the strains exerted by fired gunpowder, two guns, weighing, respectively, 931 and 955 pounds were made. One was a simple cast-iron gun without any lining, the other was of cast-iron lined with a coiled wrought-iron tube. The simple cast-iron gun proved to be the stronger. The report of the tests of these two guns shows, however, that the casting of the lined gun, which proved to be the weaker of the two, had a "trifling sand hole on the exterior entirely removed in drilling a small hole" *one and a quarter inches deep*. This flaw showed unsound metal and casts a doubt on the conclusion drawn. The other gun "had a slight defect in the bore $3\frac{1}{2}$ inches from muzzle."

Experiments on so small a scale may have their value when the conclusions are satisfactory; but, in my opinion, it is only the trial with cannon of large caliber and great power, if successful, that can reverse the universal judgment which condemns the use of simple cast-iron in heavy gun construction.

As this subject is now before the Board on Heavy Ordnance appointed under a provision of law, I am very sure that it will receive all the consideration it deserves in its bearing on the great gun problem.

Very respectfully, your obedient servant,

S. V. BENÉT,
Brigadier-General, Chief of Ordnance.

The Hon. SECRETARY OF WAR.

REPORT OF TESTS OF METALS FOR INDUSTRIAL AND OTHER PURPOSES.

WATERTOWN ARSENAL, *August 31, 1881.*

SIR: I have the honor to report that the testing machine at this arsenal has been kept in constant use during the past fiscal year in testing specimens of materials for all persons who may have desired to use it agreeably to the provisions of the act of Congress approved June 20, 1878, and when not so employed, in testing other materials for the determination of such data as might prove of value to the government or to the public generally.

The board for testing iron, steel, and other metals left some materials on hand not tested for want of funds, and some unfinished work which it had not been able to complete for the same reason. In this last class were some experiments on the resistance of thick cast-iron cylinders to an internal pressure. They were first proposed by myself in June, 1877, in the belief that they would throw much light on the construction of guns, and particularly the conversion of smooth-bore guns into rifles as practiced by the Ordnance Department. An appropriation of \$1,000 was granted by the board for the proposed tests, and I at once proceeded to have the necessary specimens prepared. I determined, in order to make the experiments the more satisfactory, that the specimens to be tested should be as large as could be broken with the 400-ton testing machine, I accordingly designed 8 cast-iron hollow cylinders 11 inches in diameter, and 22½ inches long, which I proposed to burst by resting the closed end against a firm support, and forcing a closely fitting piston into the bore previously filled to a certain depth with bees-wax, and noting the strain required to be applied to the piston to burst the cylinder. This arrangement would not develop all the strains to which a gun is subjected in firing, the longitudinal strain being eliminated by the support given to the closed end of the cylinder, but I deemed it preferable to submit to this disadvantage rather than to make the great reduction in the scale of the experiments that would become necessary if the plan were adopted of supporting the cylinders, as was done by General Rodman in his experiments, by means of collars cut from the solid at the open ends.

In order to prevent the entrance of the wax into the cracks which would be formed in the cast-iron before rupture, I determined to line the bores with thin copper tubes, as is frequently done in making cylinders for hydraulic presses.

Three cylinders 8 feet long and 1 foot in diameter were cast on end in dry sand at the South Boston foundry from the same furnace, of metal, this being what is known as gun-iron. Six pieces, each 22 inches

long, were cut from the lower part of two of these cylinders and marked, commencing at the lower end of the first cylinder, A 1, B 2, A 3; and of the second cylinder, B 1, A 2, B 3; and from the third cylinder, C 1, C 2. In order to guard against accidents that might happen in casting or finishing these eight pieces, an extra one was prepared, C 3, and not being required to fill the order, was kindly offered, free of charge, by the South Boston Iron Company for testing. They were all turned to the same diameter, and bored out as shown in Plate 1; three of them marked A, to 3.5 inches; another three marked B, to 5.1 inches; and three marked C, to 4.3 inches. The A cylinders were lined with copper tubes one-tenth of an inch thick; those marked B with wrought-iron tubes nine-tenths of an inch thick, made at the West Point foundry in the same manner and of the same iron as that used in making tubes for the large rifled guns; the C cylinders were lined with bronze tubes one-half inch thick, condensed; the first by a pressure of 28,000 pounds per square inch, the tube being secured in a strong iron mold; and the second by forcing a series of mandrels through the bore according to the Dean process. The tubes were all turned to fit the cast-iron closely, and one end closed with a flat disc, screwed in cylinders B and C, and merely dropped in A. The tube of C 3 had four longitudinal cuts 6 inches long made near the lower end to destroy its longitudinal resistance; by this means the amount of work performed by the cast-iron alone without the assistance of the tube was determined. A closely fitting thin brass cup was first inserted and pushed to the bottom of the bore; melted bees-wax was then poured in to a depth of ten inches and permitted to cool. A copper wax-check (*d*, Plate 1) was next inserted, then a steel piston 10.5 inches long, nearly filling the bore. The closed end of the cylinder was placed against the platform of the testing machine and the force applied to the piston, noting the enlargements of the cylinder and the distance to which the piston was forced in. When the strains reached 400,000 or 500,000 pounds a strong wrought-iron casing was placed around the cylinder secured by bolts, and the strains increased until the cylinder was burst. Owing to the upset of the piston in the first tests of cylinders A 1 and A 2, by which the friction against the sides of the bore was increased, thereby diminishing to a considerable extent the pressure upon the wax and upon the walls of the cylinder, the results were not satisfactory; the copper linings were removed, and after having been carefully measured the bore was continued through the breech, of the same size, and closed by a cast-iron breech-screw. New linings were inserted and the bore of A 1 was enlarged to a uniform size of 3.4 inches. The first wax-check used in A 1 was made of steel, and the great enlargement of the bore under heavy strains caused it to be broken; this allowed a slight escape of wax around the piston, interrupting its free motion and vitiating the results. The permanent enlargement of the bores of cylinders A 1 and A 2, after the first trials, was 0.187 inch and 0.11 inch respectively. C 3 was first tested without any lining tube. A strain of 800,000 pounds on the piston failed to burst it, the pressure per square inch being 55.088 pounds. The surface of the bore exposed to pressure was 153.27 square inches, as compared with 115.7 square inches in the case of C 1 and C 2. The bore was permanently enlarged by this means 0".096 and the diameter of the exterior 0".059. The tube was then inserted and the pressure applied till the cylinder gave way. It was originally intended to preserve the length of bore subjected to pressure exactly the same at all stages of the test, but it was found that to do so would involve a greater expense than the advantages gained would seem to

warrant. The cylinders lined with wrought iron and bronze enlarged more before breaking than those with the very thin linings, and consequently the length of the column of wax was thereby shortened by equal strains to a greater extent than in those last named. This condition made the tests more favorable for the resistance of those cylinders than if the column had been maintained of the same length in all.

The brass plug in the bottom of the bore of A 3 has plainly marked upon it the three cracks which were formed in the bottom of the cylinder before it finally burst. The brass was forced into these cracks, and remained raised above the general surface, marking the position and line of direction of the cracks.

Wax under strains of 60,000 pounds per square inch has its volume diminished by the compression 11.6 per cent. The steel piston 10.5 inches in length was shortened 0''.056 under a strain of 800,000 pounds. The rupture of a cylinder was attended by a loud report which was heard to a considerable distance. Fragments were thrown with such force against the wrought-iron casing as to crack it, though made of five-eighths-inch iron. The appearance of the fractures and the grain of the metal, together with the tests afterwards made, show that the iron was of good quality, a little softer than would be ordinarily used in guns. Its tensile strength is 30,000 pounds. The lines of fracture of the several cylinders are well shown in Plates 2, 3, 4, 5, 6, 7, 8, 9, which are reproduced from photographs taken soon after the cylinders were broken.

These experiments prove conclusively that a cast-iron cylinder is not strengthened, but on the contrary weakened, by enlarging the bore, and replacing the cast-iron thus cut away by a coiled wrought-iron or brass tube; that this loss of strength in the cylinders tested was about 18 per cent. for those lined with wrought iron; that a cylinder is weakened by having the bore continued through the solid breech and afterwards closed by an iron plug screwed in, and finally that the strength of the several cylinders is in direct proportion to the area of cast iron in the longitudinal section through the axis of the cylinder.

In order to show conclusively the correspondence between the statical strains of the testing machine and those exerted by the explosion of gunpowder, and to remove all doubt that might exist in the minds of some on this point, I procured and fired to extremity two 3''.2 cast-iron guns weighing 931 pounds and 955 pounds respectively, cast from the same pool of metal, and finished to the same dimensions. One was a simple cast-iron gun without any lining; the other was lined with a coiled wrought-iron tube made at West Point foundry of the same materials, in the same manner and with the same care as is used in making tubes for converting smooth-bore guns into rifles, and represented accurately to a scale of four-tenths a converted 8-inch rifle of the latest model. The cast-iron gun proved itself to be the stronger; and the ratio of its superiority over the lined gun was about the same as shown in the experiments above described. This confirmation of the results obtained by the testing machine is specially valuable for the reason that many were disposed to question their applicability to gun construction, the strains are applied and released so much more quickly. A detailed report of the experiment above referred to was forwarded to you June 25, 1881. Tables A 1, 2, 3, and 4, give the results in detail of the measurements and tests of the cylinders.

The board for testing iron, steel, and other metals had left on hand a number of iron beams which it had intended to test under the same circumstances in which they would be used for the floors of buildings. This intention I have only partially carried into effect. Two parallel

walls were built 4 feet high, 28.5 feet apart; on these five 15-inch beams were placed 7 feet 4.8 inches apart from center to center, and brick arches 4 inches thick thrown from beam to beam. The top surface was leveled with concrete and a floor of 2-inch plank laid upon it. A sheet-iron tank of the size to cover the floor, and 6 feet high, was placed on the floor, filled with water to different depths, and the deflection of the beams carefully noted. The water was then drawn off and the amount of permanent set given to the beams by each successive load thus determined. These deflections are found in the tables marked B 1, 2, 3. Other like beams were tested by dead loads applied at the middle. Tables B 4, 5, give the deflection as determined in this manner.

A comparison of the results of tests made of woods by different experimenters shows wide differences which it is not easy satisfactorily to explain. Most of the tests have been made on small specimens in which a very slight imperfection would cause a decided diminution in its resistance. In order to clear up, if possible, these discrepancies, I concluded to institute an extensive series of experiments on woods, using as large specimens as it was possible to crush, and determine the effect of such defects as are common and would be allowed in structures generally. With this view I procured a large quantity of white and yellow pine timber, such as is used in bridge-construction, and commenced to test it. The timber, however, proved to be too green to afford valuable results, and it was accordingly put in store to be seasoned. Tests have been made of such woods as could be had from the store on hand at this arsenal and of a few samples of wood from the Pacific slope.

The tests usually made of woods have been confined to the tensile and compressive strengths in the direction of their grain, but their resistance to compression in a direction perpendicular to the grain, and to shearing, are quite as valuable, if not more so, and this has been accordingly determined.

The experiments thus far made clearly show that the strength of any given wood will vary much in different specimens, depending upon their freedom from various imperfections which are to be found constantly in most woods, and that it will not be safe in making calculations on the strength of any given structure to take the results afforded by experiments on perfect specimens without allowing a very large factor of safety. Pieces which are to be subjected to high strains should be inspected with especial care, and such as have even slight defects should be rejected or larger pieces be used.

As soon as the timber on hand shall have become sufficiently well seasoned tests of it will be continued and other samples procured in order to make the tests as complete as they can be made.

An extensive series of experiments has been commenced on the strength of wrought-iron columns as used in bridge constructions, and a number of columns of various lengths and cross-sections such as are in every-day use in bridges have been tested. The experiments, however, have not been completed for the want of time, and the results thus far obtained which have now to be reported, while they are not sufficiently numerous to warrant us in drawing any definite and fixed conclusions as to the best form to be given to columns, will be doubtless found of great value to engineers.

The cast-iron separators placed between the beams weaken the column to the extent of the area removed by boring the holes for them. These experiments show the importance of accurate workmanship in the construction of columns, and the necessity for strict inspection to insure it.

The latticed columns, when they have reached their ultimate load and

yield by deflection, go rapidly without giving any indications of failing. Further experiments will be made with other kinds of columns and different latticing to determine which is the best, and also whether additional strength may not be imparted by different degrees of swell.

Tests have been made of different sizes and lengths of pins, to be used with such columns, and the deflections of the pins with different loads determined, so as to enable the engineer to proportion properly its size to the work to be done. This has not been found to be the case in all columns tested for private parties.

Tests have been commenced to determine to what extent rolled iron is improved by rerolling, that is, the difference between what is known as "double refined iron" and "extra, or single refined iron." It has been claimed by some manufacturers that their single refined iron is equal to their rerolled iron, and it is a matter of interest to large consumers to know to what extent this claim is well founded. Samples were accordingly obtained from two rolling-mills with the intention of procuring similar bars from other mills. The selection of the specimens was made with care, with a view to their representing accurately the classes to which they belonged; that the difference between them should be confined simply to the number of times that they had been heated and rolled.

The history of the process of manufacture of the two kinds of iron through their various stages, is minutely given in the report of Mr. W. G. Berg, C. E., who kindly made the selection of the specimens from iron rolled in his presence, and about which there could be no question. He has also added thereto the results of such physical tests as are usually made by bending and breaking samples, noting their behavior and the character of the fracture.

The results of the tests in detail and consolidated for comparisons are found in Tables G.

I chose Mr. James E. Howard as the most competent person to take charge of and use the testing machine. He had been with Mr. Emery for three and a half years while the machine was in the process of building, and was entirely familiar with its construction in its minutest detail, and the precautions necessary to be taken in its care, use, and preservation. He is highly skillful in working it, is careful, painstaking, and accurate in all that he does, and intelligent and quick in his observation. I do not know where I could have found a person so well fitted in every respect to take charge of this machine, and to make the tests of materials with it.

As the fact becomes more widely known that the testing machine can be used by any one who may wish to do so on the payment of the actual expenses of making the tests desired, the number of persons who will avail themselves of the privilege will increase, and unless some change shall be made in the law regulating its use the machine will be wholly taken up by private parties to the exclusion of the government itself. I therefore respectfully recommend that Congress be asked to modify the law of June 20, 1878, so that the government shall have at all times the prior claim to the use of the machine for making such experiments as may be deemed of special interest to any department, or of general interest to the public at large. Many more experiments could have been made during the past year had it not been for the provisions of the act of Congress just referred to, which gives to citizens who shall pay the required fee the sole and exclusive right to use the machine, not contemplating the contingency that officers connected with the War, Navy, or Treasury Departments might wish to avail themselves of the

privilege now granted only to citizens not connected with the government.

I would respectfully recommend that the necessary legislation be obtained to authorize the department to sell the material which has been injured in testing, and to apply the proceeds of the sale to the procuring of new material to be used in making further tests, on the plan now pursued in regard to the sale of obsolete and the purchase of new projectiles.

At present the testing machine is capable of exerting and measuring strains of tension and compression only, but it is highly desirable to test the transverse and torsional strength of certain materials, and, in fact, the testing machine cannot be regarded as complete until it shall have been arranged to test the resistance of large specimens to each of these strains. When the machine was first contracted for the question was fully considered whether it should be made complete in the first place, or whether it should be built, a portion at a time, as money could be obtained for the purpose. It was decided to adopt the latter course, and the inventor has his plans completed for making the additions already referred to whenever it is deemed expedient to proceed therewith. I respectfully recommend that Congress be asked to grant an appropriation for this purpose, and the work be proceeded with as soon as the funds shall be available. Sufficient work has, it is believed, been done to show the advantages to be gained from liberal appropriation for such determinations. The money already received has been usefully and economically expended, and the information gained will not be long in bringing forth abundant fruit.

It has been objected by some that the government has no right to undertake such experiments as have been begun, and that such tests should be left entirely to the enterprise of private parties. It would seem, however, to be one of the first duties of the general government to guard the lives of the people, and as the safety of all depends more or less upon the strength and stability of the bridges and other structures used in common by the people, it becomes a matter of deep interest to all that our engineers and architects shall be furnished with full and reliable data on which to base their calculations in planning such structures.

I feel great confidence in expressing the opinion that the experiments already referred to on the resistance of thick cast-iron cylinders will be found to be worth to the government in the money absolutely saved thereby many times more than the whole cost of the machine. I shall be greatly mistaken if they do not effect an entire change in the system of gun construction, so that in less than five years' time the present plan will be entirely abandoned, and not a single gun will be made according to it.

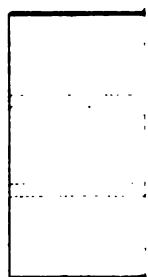
There are other questions in gun construction which it is believed can be most economically solved by means of the testing machine. Should there still exist doubts in the minds of any as to the entire reliability of the determinations of the testing machine when applied to gun construction, these doubts may be solved by instituting further comparisons between the results obtained thereby and corresponding results with gunpowder.

Very respectfully, your obedient servant,

T. T. S. LAIDLEY,
Colonel of Ordnance.

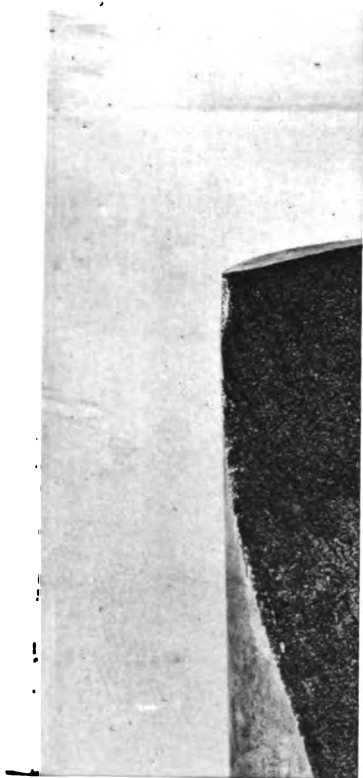
The CHIEF OF ORDNANCE.

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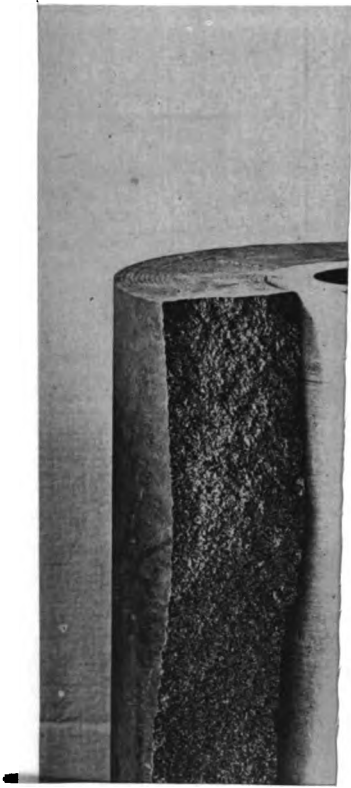


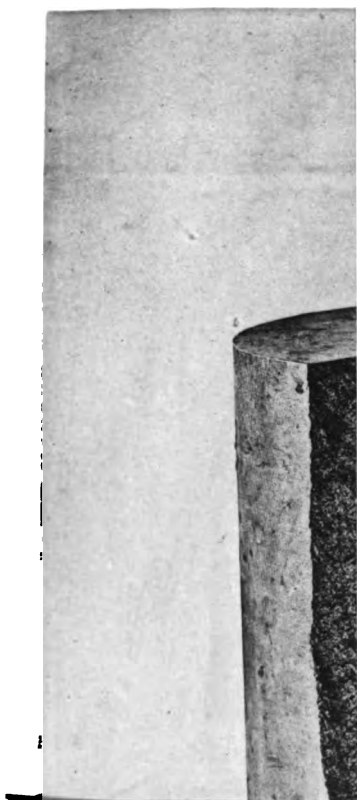
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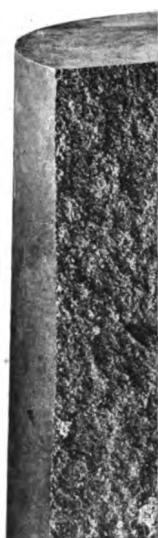












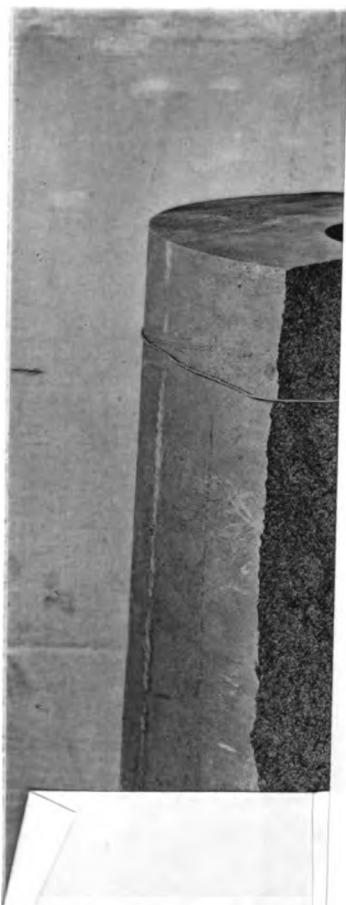




TABLE A 1.—Dimensions of cylinders.

Distinguishing marks.	Total length.	External diameter.	Internal diameter of cast-iron.	Depth of hole in cast-iron.	Thickness of lining.	Diameter of bore.
A 1.	22.50	10.998	3.506	17.13	.10	3.306
A 2.	22.50	11.000	3.507	17.14	.10	3.307
A 3.	22.50	10.997	3.505	17.09	.10	3.305
B 1.	22.00	11.000	5.110	16.50	.912	3.286
B 2.	21.97	11.000	5.110	16.52	.912	3.287
B 3.	22.00	10.999	5.114	16.50	.914	3.286
C 1.	22.00	10.998	4.312	16.52	.512	3.287
C 2.	22.00	10.995	4.300	16.50	.508	3.284
C 3.	22.00	11.004	4.303	16.50	.510	3.280

TABLE A 2.—Cylinder tests.

Distinguishing marks.	Maximum enlargement of external diameter under loads of—								
	150,000 pounds.	200,000 pounds.	250,000 pounds.	300,000 pounds.	350,000 pounds.	400,000 pounds.	450,000 pounds.	500,000 pounds.	550,000 pounds.
A 1.	"	"	"	.001	.001	.005	.006	.011	.015
A 2.	"	"	"	.001	.001	.005	.006	.011	.015
A 3.	"	.002	"	.005	"	.011	"	.019	.028
B 1.	.001	"	"	.007	.013	.017	.029	.041	.059
B 2.	.002	"	.003+	.006	.008	.013	.020	.028	"
B 3.	"	.003	.003	.008	.011	.014	"	"	"
C 1.	.002	"	.003	.005+	.006	.012+	"	"	"
C 2.	.002	.002+	.005	.007	.008+	.010	.016	"	"
C 3.	.006	.007	.0085	"	"	"	"	"	"

TABLE A 3.—Cylinder tests.

Distinguishing marks.	Under initial load of 5,000 pounds on piston.			Ultimate loads.	
	Length of bore filled with wax.	Surface of bore exposed to wax.	Volume of wax.	Actual.	Internal pressure per square inch.
A 1.	Inches.	Square inches.	Cubic inches.	Pounds.	Pounds.
A 2.	9.878	111.19	84.65	800,000	93,344
A 3.	8.33	95.12	71.47	800,000	93,344
B 1.	10.445	117.03	89.62	792,500	92,366
B 2.	10.097	112.71	85.62	635,500	74,936
B 3.	10.010	118.81	84.88	687,900	81,120
C 1.	10.471	116.57	88.79	660,200	77,853
C 2.	10.388	115.71	88.09	735,400	86,722
C 3.	10.385	115.61	87.96	698,100	82,420
A 1.	10.064	113.00*	86.23	769,200	83,518
A 2.	10.371	116.37†	89.13	737,600	85,867
C 3.	10.388	115.49	87.78	599,000	70,888

* Diameter of bore considered to be 3.303 the interior diameter of the lining.

† Diameter of bore considered to be 3.308 the interior diameter of the lining.

TABLE A 4.—Physical and chemical proportions of the materials.

[Analyzed by Capt. John Pitman, Ordnance Department.]

Specific gravity	7.169
Tensile strength, pounds per square inch	30,000
Phosphorus	0.371
Silicon	1.471
Manganese	0.178
Copper	0.008
Cobalt	0.055
Nickel	0.055
Sulphur	0.043
Total carbon	2.781
Graphite	2.642

BRONZE LINING TUBE.

Specific gravity before compression	8.107
Specific gravity after compression	8.524
Tensile strength, pounds per square inch, after compression	42,190
Elongation (per cent.) after compression	5.

COPPER LINING TUBE.

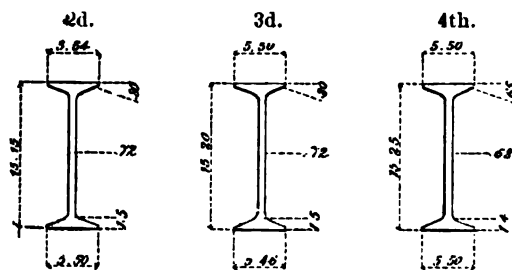
Specific gravity after compression	8.524
Tensile strength, pounds per square inch, after compression	45,290
Elongation (per cent.) after compression	7.

BRONZE PLUG IN BOTTOM OF BORE.

Specific gravity before compression	7.8656
Specific gravity after compression	8.3748

TEST OF I BEAMS WITH BRICK ARCHES AND FLOOR RESTING THEREON.

Length of beam	29'
Distance between supports	28' 6"
Distance from center to center	7' 4"
Rise of brick arches	8" 5
Thickness of arches	4"



Cross-section of beams.

MATERIALS IN ARCHES AND FLOORS.

	Pounds
Brick, sand, cement, and lime	53,326
Iron tank	1,320
Floor boards and sides	7,100
Posts, stirrups, tie-rod, spikes, and nails	1,623
Gravel	29,500
Total weight	93,329

Initial load on beams, weight of arches and tank, including the weight of the beams, is 110.38 pounds per square foot of the floor area.

Inside dimensions of the tanks, 29' 7½" × 28' 8" 31 × 6.

Deflection of beam by its own weight, 0".042.

Test of 2d beam.

Condition of tank.	Total load on beam.	Pounds per square foot of floor area.	Deflection at middle.	Permanent set at middle.	Remarks.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	
Empty.....	23, 284	110. 38	. 600	0	{ Initial load includes the weight of the arches, floor, and 1 beam. Permanent sets measured from position under initial load.
1 foot water.....	36, 823	174. 58	1. 039	.....
Empty.....	23, 284	110. 38	.....	. 113
2 feet water.....	50, 258	238. 28	1. 530	{ After sustaining load 8 hours.
Empty.....	23, 284	110. 38	.....	. 301
2½ feet water.....	57, 028	270. 38	{ 1. 891 1. 928	.....
Empty.....	23, 284	110. 38 454	{ After sustaining load 16½ hours After sustaining load 23½ hours.
3 feet water.....	68, 777	302. 38	{ 2. 203 2. 285 2. 339	.....
Empty.....	23, 284	110. 38	.....	. 714
3½ feet water.....	70, 504	334. 28	{ 2. 551 2. 621	{ After sustaining load 15 hours.
Empty.....	23, 284	110. 38	.....	. 954
4 feet water.....	77, 316	366. 58	{ 2. 900 3. 058	.....
Empty.....	23, 284	110. 38	1. 254	{ After sustaining load 2 hours.
4½ feet water.....	84, 234	399. 38	3. 602	.....
Empty.....	23, 284	110. 38	.....	1. 656
1 foot water.....	37, 667	178. 58	2. 628	{ This load caused gradual and continued yielding.
600-10" shot.....	98, 884	468. 88	4. 980	.....
600-10" shot and 1 foot water. }	117, 490	557	.....	.....
600-10" shot.....	98, 884	468. 88	10. 490	.....
Empty.....	23, 284	110. 38	.....	8. 110

Test of 3d beam.

Condition of tank.	Total load on beam.	Pounds per square foot of floor area.	Deflection at middle.	Permanent set at middle.	Remarks.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	
Empty.....	23, 284	110. 38	. 600	0	{ Initial load includes the weight of the arches, floor, and 1 beam. Permanent sets measured from the position under initial load.
1 foot water.....	36, 823	174. 58	1. 044	.....
Empty.....	23, 284	110. 38	.....	. 107
2 feet water.....	50, 258	238. 28	1. 546	{ After sustaining load 8 hours.
Empty.....	23, 284	110. 38	.....	. 263
2½ feet water.....	57, 007	270. 28	{ 1. 870 1. 887	.....
Empty.....	23, 284	110. 38 292	{ After sustaining load 16½ hours. After sustaining load 23½ hours.
3 feet water.....	63, 756	302. 28	{ 2. 201 2. 270 2. 297	.....
Empty.....	23, 284	110. 38	.....	. 647
3½ feet water.....	70, 526	334. 38	{ 2. 554 2. 591	{ After sustaining load 15 hours.
Empty.....	23, 284	110. 38	.....	. 884
4 feet water.....	77, 338	366. 68	{ 3. 000 3. 091	.....
Empty.....	23, 284	110. 38	1. 223	{ After sustaining load 2 hours.
4½ feet water.....	84, 297	399. 68	3. 751	.....
Empty.....	23, 284	110. 38	.....	1. 720
1 foot water.....	37, 689	178. 68	2. 695	{ This load caused continued yielding.
600-10" shot.....	98, 884	468. 88	6. 180	.....
600-10" shot and 1 foot water. }	118, 760	563	.....	.....
600-10" shot.....	98, 884	468. 88	13. 070	.....
Empty.....	23, 284	110. 38	.....	10. 800

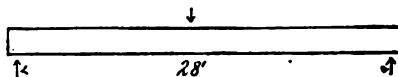
Test of 4th beam.

Condition of tank.	Total load on beam.	Pounds per square foot of floor area.	Deflection at middle.	Permanent set at middle.	Remarks.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	
Empty.....	23, 284	110. 38	. 600	0	{ Initial load includes the weight of the arches, floor, and I beam. Permanent sets measured from the position under the initial load.
1 foot water.....	36, 866	174. 78	1. 016		
Empty.....	23, 284	110. 38		. 089	
2 feet water.....	50, 279	238. 38	1. 483		
Empty.....	23, 284	110. 38		. 214	
2½ feet water.....	57, 028	270. 38	{ 1. 793 1. 804		After sustaining load 8 hours.
Empty.....	23, 284	110. 38		. 329	
3 feet water.....	63, 735	302. 18	{ 2. 047 2. 132		After sustaining load 16½ hours.
Empty.....	23, 284	110. 38		. 517	
3½ feet water.....	70, 505	334. 28	{ 2. 388 2. 452		After sustaining load 23½ hours.
Empty.....	23, 284	110. 38		. 769	
4 feet water.....	77, 275	368. 38	{ 2. 752 2. 834		After sustaining load 15 hours.
Empty.....	23, 284	110. 38		1. 022	
4½ feet water.....	84, 192	399. 18	3. 452		After sustaining load 2 hours.
Empty.....	23, 284	110. 38		1. 531	
1 foot water.....	37, 625	178. 38	2. 489		{ This load caused continued yielding.
600-10" shot.....	98, 884	468. 88	6. 500		
600-10" shot and 1 foot water.....	118, 830	561			
600-10" shot.....	98, 884	468. 88	11. 960		
Empty.....	23, 284	110. 38		9. 790	

TRANSVERSE TESTS OF WROUGHT-IRON I BEAMS.



Total length.....	28' 11".82.
Total weight.....	1, 874 pounds.
Sectional area.....	19.4 square inches.
Distance between end supports.....	28 feet.



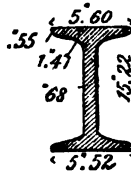
Loaded at middle with dead weight. Unsupported laterally.

Initial load = $\frac{1}{2}$ weight of beam between supports (904 pounds), and weight of chains (235 pounds) = 1,139 pounds.

Deflections and permanent set measured at middle.

Loads.	Vertical deflection.	Vertical permanent set.	Horizontal deflection.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
1, 139	.045	0	.....	Permanent sets measured from the position of the beam under the first initial load, 1,139 pounds.
4, 000	.173	.....	.....
6, 000	.265	.....	.....
1, 139	.....	.006	.....
8, 000	.350	.....	.....
1, 139	.....	.009	.....
10, 000	.437	.....	.15	
1, 139	.....	.009	.....
Up to this time the readings give deflections for about the whole length of beam; the end supports were not properly leveled, the beam taking its bearing at extreme ends. End supports now adjusted.				
1, 139	.....	.009	.....
12, 000	.539	.....	.20	
1, 139	.....	.022	.18	
14, 000	.618	.....	.20	
1, 139	.....	.016	.18	
16, 000	.709	.....	.87	
1, 139	.....	.028	.35	
18, 000	.806	.....	.87	
1, 139	.....	.034	.35	
20, 000	.905	.....	.87	
1, 139	.....	.039	.35	
22, 000	1.012	.....	.37	
1, 139	.....	.071	.35	
24, 000	1.143	.....	1.06	
1, 139	.....	.090	.....
26, 000	.....	.....	.....	Net strength.

Under ultimate load failure gradually took place by horizontal deflection and slight increase in vertical deflection.



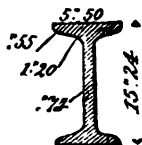
Total length	29 feet.
Total weight	1,905 pounds.
Sectional area	19.71 square inches.
Distance between end supports	28 feet.

Loaded at middle. Unsupported laterally.

Initial load = $\frac{1}{4}$ weight of beam (920 pounds), and weight of chain (235 pounds) = 1,155 pounds.

Loads.	Vertical deflection.	Vertical permanent set.	Horizontal deflection.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	
1, 155	.049	0	.....
4, 000	.173	.....	.....
6, 000	.257	.....	.....
1, 155	.....	.007	.....
8, 000	.344	.....	.....
1, 155	.....	.009	.....
10, 000	.431	.....	.....
1, 155	.....	.009	.....
12, 000	.514	.....	.....
1, 155	.....	.004	.....

Loads.	Vertical deflection.	Vertical permanent set.	Horizontal deflection.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	
14,000	.605			
1,155		.008		
16,000	.685			
1,155		.011		
18,000	.773		.18	
1,155		.010	0.	
20,000	.811		.20	
1,155		.014	0.	
22,000	.963		.25	
1,155		.023	0.	
24,000	1.064		.52	
1,155		.031	.03	
25,000	1.125		.75	
1,155		.036	.10	
26,000	1.170		.83	
Rested 15 hours under 26,000 pounds strain.				
26,000	1.187		.83	
1,155		.056	.10	
27,000	1.229		1.10	
1,155		.056	.25	
28,000	1.327		1.50	
1,155		.079	.38	
29,000				Sustained momentarily, then rapidly deflected horizontally.



Total length.....	29 feet.
Total weight.....	2,014 pounds.
Sectional area.....	20.83 square inches.
Distance between end supports.....	28 feet.

Loaded at middle. Unsupported laterally.

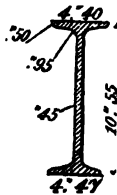
Initial load = $\frac{1}{2}$ weight of beam at middle (1,007 pounds) + weight of chain (235 pounds) = 1,242 pounds.

Deflections and permanent set measured at middle.

Loads.	Vertical deflection.	Vertical permanent set.	Horizontal deflection.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	
1,242	.051	0		
4,000	.165			
1,242		.008		
6,000	.256			
1,242		.009		
8,000	.336		.03	
1,242		.010	0.	
10,000	.429		.03	
1,242		.011	0.	
12,000	.507		.03	
1,242		.016	0.	
14,000	.593		.05	
1,242		.016	0.	
16,000	.674		.12	
1,242		.028	0.	
18,000	.759		.10	
1,242		.018	0.	
20,000	.843		.20	
1,242		.018	0.	

Deflection and permanent set measured at middle—Continued.

Loads.	Vertical deflection.	Vertical permanent set.	Horizontal deflection.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	
22,000	.926	.....	.20	
1,242	.....	.024	0.	
24,000	1.007	.....	.30	
1,242	.....	.023	0.	
26,000	1.091	.....	.30	
Rested under strain 14 hours.				
26,000	1.101	.....	.15	
1,242	.....	.034	0.	
27,000	1.138	.....	.20	
1,242	.....	.037	0.	
28,000	1.180	.....	.40	
1,242	.....	.037	— .03	
29,000	1.224	.....	.43	
1,242	.....	.041	— .03	
30,000	1.274	.....	.50	
1,242	.....	.047	0.	
31,000	1.333	.....	.65	
1,242	.....	.059	0.	
32,000	1.389	.....	.80	
32,000	1.404	.....	.86	3 m. rest.
32,000	.....	.....	1.02	9 m. rest.
32,000	.....	.....	1.12	15 m. rest.
32,000	.....	.....	1.20	20 m. rest.
32,000	.....	.....	1.30	25 m. rest.
32,000	.....	.....	1.38	30 m. rest.
32,000	.....	.....	1.44	35 m. rest.
32,000	1.971	.....	1.52	40 m. rest.
32,000	.....	.....	1.60	45 m. rest.
32,000	.....	.....	1.66	50 m. rest.
32,000	.....	.....	1.76	55 m. rest.
32,000	.....	.....	1.94	60 m. rest.
32,000	.....	.....	2.32	65 m. rest.
Test discontinued after 65 m. rest.				



Total length 18 feet.
 Total weight 606 pounds.
 Sectional area 10.6 square inches.
 Distance between end supports 17 feet.

Loaded at middle. Unsupported laterally.

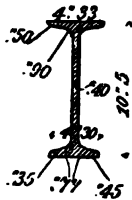
Initial load = $\frac{1}{2}$ weight of unsupported beam (287 pounds) + weight of chains (235 pounds) = 522 pounds.

Deflections and permanent set measured at middle.

Loads.	Vertical deflection.	Vertical permanent set.	Horizontal deflection.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	
522	.021	0.	.....
3,000	.124	.....	0.	
522	.....	.005	.....
4,000	.165	.....	0.	
522	.....	.004	.....
5,000	.206	.....	0.	

Deflections and permanent set measured at middle—Continued.

Loads.	Vertical deflection.	Vertical permanent set.	Horizontal deflection.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	
522		.004		
6,000	.244		.02	
522		.005		
7,000	.283		-.01	
522		.011	-.01	
8,000	.327		-.03	
522		.015	0.	
9,000	.369		-.05	
522		.016	0.	
10,000	.405		-.01	
522		.019	-.01	
11,000	.451		-.05	
522		.023	-.03	
12,000	.501		-.10	
522		.027	-.01	
13,000	.541		-.10	
522		.043	-.01	
14,000	.596		-.15	
522		.058	-.08	
15,000	.652		-.20	
522		.070	-.08	
16,000	.715		-.45	
522		.096	-.15	
17,000	.771		-.32	
522		.123	-.10	
18,000	.847		-.45	
522		.156	-.20	
19,000	.926		-.50	
522		.195	-.20	
20,000	1.003		-.40	
20,000	1.068		-.35	After resting one hour.
522		.307	-.18	
21,000				Load applied and beam failed suddenly by vertical and horizontal deflection. the horizontal deflection being finally in the plus direction.



Total length.....	18 feet.
Total weight.....	554 pounds.
Sectional area.....	9.23 square inches.
Distance between end supports.....	17 feet.

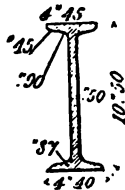
Loaded at middle. Unsupported laterally.

Deflections and permanent set measured at middle.

Loads.	Vertical deflection.	Vertical permanent set.	Horizontal deflection.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	
496	.024	0.		
3,000	.128		0.	
496		+.002		
4,000	.176		0.	
496		0.		
5,000	.209		.06	

Deflection and permanent set measured at middle—Continued.

Loads.	Vertical deflection.	Vertical permanent set.	Horizontal deflection.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	
496		.005		
6,000	.262		0.	
496		.005		
7,000	.292		.05	
496		.004		
8,000	.332		.05	
496		.011		
9,000	.376		.05	
496		.003		
10,000	.423		0.	
496		.006		
11,000	.455		.10	
496		.003		
12,000	.500		.10	
496		.006		
13,000	.551		0.	
496		.015		
14,000	.607		0.	
496		.024		
15,000	.647		0.	
496		.038		
16,000	.707		0.	
496		.056		
17,000	.783		— 20	
496		.079	— 15	
18,000	.903		— 75	After 8 m. rest.
18,000	.934			After 15 h. rest.
18,000	.956		— 80	
496		.167	— 35	
18,500	.975		— 80	
496		.173	— 35	
19,000	.987		— 65	
496		.169	— 30	
19,500	.984		— 47	
496		.176	— 27	
20,000	1.016		— 50	
496		.188	— 28	
20,500	1.065		— 62	
496		.217	— 30	
21,000	1.136		— 65	
496		.275	— 46	
21,500				Beam failed immediately. Yielded by downward and lateral deflection in the minus direction.



Total length 18 feet.
 Total weight 618 pounds.
 Sectional area 10.3 square inches.
 Distance between end supports 17 feet.

Loaded at middle. Unsupported laterally.

Initial load = $\frac{1}{2}$ weight of beam (unsupported) + weight of chain,
 292 pounds + 235 pounds = 527 pounds.

H. Ex. 12—2

TEST OF METALS.

Deflections and permanent set, measured at the middle.

Loads.	Vertical deflection.	Vertical permanent set.	Horizontal deflection.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
527	.018	0	.....
3,000	.119	.....	.....
527	.....	+ .003	.....
4,000	.154	.....	.....
527	.....	.019	.....
5,000	.188	.....	.02	
527	.....	.009	.....
6,000	.230	.....	.02	
527	.....	.001	.....
7,000	.266	.....	0.	
527	.....	.002	.....
8,000	.309	.....	0.	
527	.....	.006	.....
9,000	.343	.....	— .03	
527	.....	.007	.....
10,000	.384	.....	— .10	
527	.....	.010	.....
11,000	.437	.....	— .03	
527	.....	.021	.....
12,000	.486	.....	0.	
527	.....	.033	.....
13,000	.528	.....	— .12	
527	.....	.042	.....
14,000	.581	.....	— .12	
527	.....	.058	.....
15,000	.628	.....	— .20	
527	.....	.079	0.	
16,000	.688	.....	— .25	
527	.....	.102	.....
17,000	.758	.....	— .30	
527	.....	.139	0.	
18,000	.849	.....	— .10	
527	.....	.187	0.	
19,000	.944	.....	— .10	
527	.....	.246	0.	
20,000	.....	.....	.....	Beam failed rapidly under this load, deflecting downward, and in minus direction horizontally.

STRENGTH OF WOOD
GROWN ON THE
PACIFIC SLOPE.

DETERMINED AT
Watertown Arsenal.

T. T. S. LAIDLEY,
Colonel of Ordnance, Commanding.

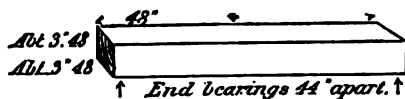
1881.

STRENGTH OF WOOD ON THE PACIFIC SLOPE.

TRANSVERSE STRENGTH OF CALIFORNIA WOOD.

Specimens supported at ends ; loaded at middle. Supported on oak pieces ; end of grain. Loaded with oak piece ; taking bearing one inch long and the width of stick. Middle bearing used endwise. Corners rounded, 1" radius.

No. 861.—OREGON PINE.



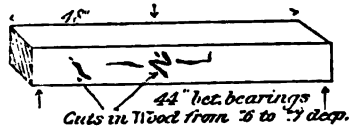
[Dimensions, 3".48 x 3".48.]

Loads applied.	Deflection.	Set.	Remarks.
	<i>Inch.</i>	<i>Inch.</i>	
0			The modulus of rupture (R) for transverse loads computed by the formula $R = \frac{6}{b d^2} P l$
200	.03		
400	.03		
600	.05		
800	.07		
1,000	.08		
1,200	.09		
1,400	.10		
1,600	.12		
1,800	.14		
2,000	.15		
1,000		0	
2,500	.17		
3,000	.22		
3,500	.25		
4,000	.28		R = 11,900 pounds. Ultimate strength—sustained 5 minutes.
4,500	.32		
5,000	.35		
1,000		0	
5,500	.40		
6,000	.44		
1,000		.02	
6,200	.46		
6,400	.48		
6,600	.51		
6,800	.54		
7,000	.58		
1,000		.05	
7,200	.61		
7,400	.64		
7,600	.96		

Under load of 7,600 pounds, yielding continued slowly till fracture. Middle bearing indented wood about ".2. Fracture occurred by wood giving way on tension side. The stick finally split suddenly along the grain.

No. 862.—OREGON MAPLE.

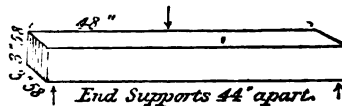
[Dimensions 3".63 × 3".63.]



Loads applied.	Deflection.	Set.	Remarks.
	<i>Inch.</i>	<i>Inch.</i>	
0			
500	.08		
1,000	.13		
1,500	.17		
2,000	.22		
1,000		0	
2,500	.27		
3,000	.31		
3,500	.37		
4,000	.41		
4,200	.43		
4,400	.45		
4,600	.48		
4,800	.50		
5,000	.52		
1,000		.01	
5,200	.54		
5,400	.57		
5,600	.60		
5,800	.62		
6,000	.65		
6,200	.68		
6,400	.70		
6,600	.74		
6,800	.79		
7,000	.82		
1,000		.09	
7,200	.86		
7,400	.91		
7,600			R = 10,560 pounds.
7,650			Ultimate strength.

Wood fractured suddenly, giving way on tension side, fractures reaching from side in to the cuts found in the wood. Indentation at middle bearing, ".01.

No. 863.—CALIFORNIA LAUREL.



(Worm-eaten specimen.)

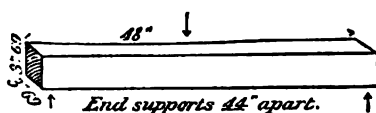
Loads applied.	Deflection.	Set.	Remarks.
	<i>Inch.</i>	<i>Inch.</i>	
0			
500	.07		
1,000	.12		
1,500	.17		
2,000	.20		
1,000		0	
2,500	.25		

No. 863.—CALIFORNIA LAUREL—Continued.

Loads applied.	Deflection.	Set.	Remarks.
	<i>Inch.</i>	<i>Inch.</i>	
3,000	.29	.....
3,500	.33	.....
4,000	.37	.....
4,200	.39	.....
4,400	.41	.....
4,600	.42	.....
4,800	.45	.....
5,000	.47	.....
1,000	.....	.01	
5,200	.49	.....
5,400	.51	.....
5,600	.53	.....
5,800	.56	.....
6,000	.57	.....
1,000	.....	.03	
6,200	.59	.....	R = 8,920 pounds. Ultimate strength.

Sudden fracture took place just as load reached 6,200 pounds. Strength of specimen doubtless impaired by worm-holes. Shook dust out of fracture. Indentation at middle bearing, none.

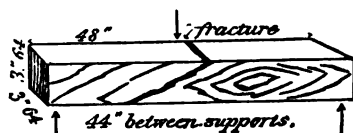
No. 864.—AVA MEXICANA.



Loads applied.	Deflection.	Set.	Remarks.
	<i>Inch.</i>	<i>Inch.</i>	
0			
500	.08	.....
1,000	.12	.....
1,500	.15	.....
2,000	.21	.....
1,000	.....	0	
2,500	.28	.....
3,000	.30	.....
3,500	.34	.....
4,000	.40	.....
4,200	.43	.....
4,400	.44	.....
4,600	.47	.....
4,800	.48	.....
5,000	.50	.....
1,000	.....	.02	
5,200	.53	.....
5,400	.55	.....
5,600	.57	.....
5,800	.59	.....
6,000	.63	.....
1,000	.....	.06	
6,200	.65	.....
6,400	.68	.....
6,600	.71	.....
6,800	.75	.....
7,000	.78	.....
1,000	.....	.09	
7,200	.83	.....
7,400	.86	.....
7,560	.....	.....	R = 9,930 pounds. Ultimate strength.

Good fracture on tension side. Broke suddenly. Indentation at middle bearing, ".02.

No. 865.—OREGON ASH.

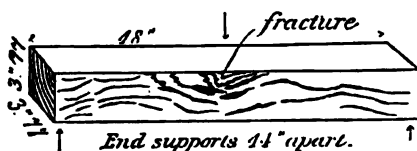


(Cross-grained.)

Loads applied.	Deflection.	Set.	Remarks.
	<i>Inch.</i>	<i>Inch.</i>	
0	.....	.....
500	.08	.....
1,000	.13	.....
1,500	.19	.....
2,000	.24	.....
1,000	.....	0	
2,500	.30	.....
3,000	.35	.....
3,500	.40	.....
4,000	.47	.....
4,200	.49	.....
4,400	.51	.....
4,600	.54	.....
4,800	.57	.....
5,000	.59	.....
1,000	.....	.05	
5,200	.61	.....
5,400	.65	.....
5,600	.68	.....	NOTE.—No indentation of wood at middle bearing. R = 8460 pounds. Ultimate strength.
5,800	.72	.....
6,000	.75	.....
1,000	.....	.08	
6,180	.....	.....

Sudden fracture. Specimen fractured obliquely, following grain.

No. 866.—MEXICAN WHITE MAHOGANY OR PRIMAVERA MEXICANA.



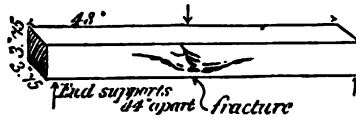
Loads applied.	Deflection.	Set.	Remarks.
	<i>Inch.</i>	<i>Inch.</i>	
0	.....	.....
500	.06	.....
1,000	.12	.....
1,500	.16	.....
2,000	.21	.....
1,000	.....	0	
2,500	.25	.....
3,000	.29	.....
3,500	.34	.....
4,000	.38	.....
4,200	.41	.....
4,400	.42	.....
4,600	.45	.....
4,800	.47	.....
5,000	.50	.....
1,000	.....	.01	
5,200	.51	.....
5,400	.54	.....

No. 866.—MEXICAN WHITE MAHOGANY OR PRIMAVERA MEXICANA—
Continued.

Loads applied.	Deflection.	Set.	Remarks.
	<i>Inch.</i>	<i>Inch.</i>	
5,600	.55	.....
5,800	.57	.....
6,000	.58	.....
1,000	.....	.01	
6,200	.60	.....
6,400	.64	.....
6,600	.66	.....
6,800	.71	.....
7,000	.74	.....
1,000	.....	.05	
7,050	.74	.....	Started crack, tension side.
7,200	.80	.....
7,400	.85	.....
7,600	.89	.....	R = 9,610 pounds.
7,800	.91	.....	Ultimate strength.

Fractured suddenly under 7,800 pounds strain. Grain wavy at middle of specimen. Indentation at middle bearing, ".00½.

No. 867.—MEXICAN CEDAR.



Loads applied.	Deflection.	Set.	Remarks.
	<i>Inch.</i>	<i>Inch.</i>	
0			
500	.07	.....
1,000	.14	.....
1,500	.19	.....
2,000	.25	.....
2,500	.31	.....
3,000	.37	.....
1,000	.....	.01	
3,500	.44	.....
4,000	.50	.....
1,000	.....	.01	
4,200	.53	.....
4,400	.55	.....
4,600	.57	.....
4,800	.61	.....
5,000	.64	.....
1,000	.....	.02+	
5,200	.68	.....
5,400	.71	.....
5,600	.75	.....
5,800	.80	.....
6,000	.85	.....
1,000	.....	.08	
6,200	.91	.....	R = 7,935 pounds.
6,340	.98	.....	Ultimate strength.

Fractured suddenly. Indentation at middle bearing, ".03.

No. 868.—MEXICAN MAHOGANY.



Loads applied.	Deflection.	Set.	Remarks.
	<i>Inch.</i>	<i>Inch.</i>	
0			
500	.03		
1,000	.06		
1,500	.08		
2,000	.11		
2,500	.14		
3,000	.16		
3,500	.19		
4,000	.21		
1,000		0	
4,200	.22		
4,400	.23		
4,600	.24		
4,800	.25		
5,000	.26		
5,200	.26		
5,400	.28		
5,600	.29		
5,800	.30		
6,000	.31		
1,000		0+	
6,200	.31		
6,400	.32+		
6,600	.34		
6,800	.35		
7,000	.36		
7,200	.37		
7,400	.38		
7,600	.39		
7,800	.40		
8,000	.41		
1,000		.01	
8,200	.43		
8,400	.44		
8,600	.44+		
8,800	.45		
9,000	.47		
9,200	.48		
9,400	.49		
9,600	.50		
9,800	.52		
10,000	.53		
1,000		.02	
10,200	.54		
10,400	.55		
10,600	.56		
10,800	.58		
11,000	.60		
11,200	.61		
11,400	.62+		
11,600	.64+		
11,800	.66		
12,000	.68		
12,200			
12,400			
12,600			
12,650			R = 15,830 pounds. Ultimate strength.

Indented at middle bearing, ".01. Sudden fracture.

No. 955.—OREGON PINE.

[22" between end supports. Loaded at middle. Middle bearing 1" wide. Size of specimen, 1".22 breadth \times 1".23 depth.]

Loads applied.	Deflection	Remarks.
	<i>Inch.</i>	
0	0	
50	.04	
100	.07	
150	.10	
200	.13	
250	.15	
300	.17	
400	.23	
500	.30	
600	.35	Opened crack on tension side at middle.
745	.....	Ultimate strength. $R=13,210$ pounds.

•Cross-grained specimen.

No. 956.—OREGON PINE.

[Tested same as No. 955. Dimensions, 1".21 breadth \times 1".20 depth.]

Loads applied.	Deflection.	Remarks
	<i>Inch.</i>	
0	.....
100	.06	
200	.14	
300	.20	
400	.25	
500	.31	
600	.37	
700	.46	
800	.54	
875	.....	Ultimate strength. $R=16,570$ pounds.

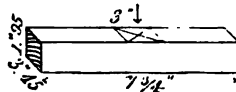
Failed on the tension side.

COMPRESSION OF CALIFORNIA WOOD.

This series of wood tests is made with pieces of specimens 861 to 869, using such parts of the specimens as did not appear to have been injured during the transverse tests.

INDENTATION PERPENDICULAR TO GRAIN.

No. 919.—OREGON PINE.

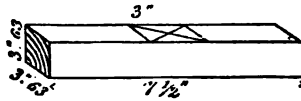


(Compressed area, $3".45 \times 3" = 10.35$ square inches.)

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
		<i>Inch.</i>	
103	10	0	
1,035	100	0	
2,070	200	.0 +	
3,105	300	.00 $\frac{1}{2}$	
5,175	500	.01 -	
7,245	700	.01	
10,000	.....	.02	
10,900	.....	.03	
11,900	1,150	.05	$\frac{1}{16}$ " indentation.
12,420	1,200	.08	Opened cracks.

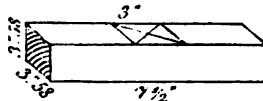
TEST OF METALS.

No. 920.—OREGON MAPLE.

(Compressed area, $3''.63 \times 3'' = 10.89$ square inches.)

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
		<i>Inch.</i>	
109	10	0.	
2,178	200	.00 1/2	
4,356	400	.00 1/2	
6,534	600	.01	
8,712	800	.01	
10,890	1,000	.01	
15,246	1,400	.01	
19,602	1,800	.04	
20,146	1,850	.04 1/2	
20,418	1,875	.05	1/8" indentation.
20,691	1,900	.06	
21,780	2,000	.08	Yielding continued under this load.
22,869	2,100	.14	
23,958	2,200	.19	Opened cracks and sheared fibers at edges of compressed area.

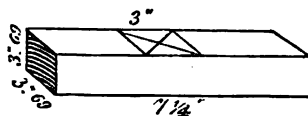
No. 921.—CALIFORNIA LAUREL.

(Compressed area, $3''.58 \times 3'' = 10.74$ square inches.)

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
		<i>Inch.</i>	
107	10	.00 1/2	
4,296	400	.01 +	
8,592	800	.01 1/2	
10,740	1,000	.01 1/2	
12,888	1,200	.02	
15,036	1,400	.02	
17,184	1,600	.02 1/2	
18,258	1,700	.03	
19,332	1,800	.03 1/2	
19,869	1,850	.04	
20,406	1,900	.04 1/2	
20,943	1,950	.04 1/2	
21,480	2,000	.05	1/8" indentation.
22,554	2,100	.05 1/2	
23,628	2,200	.07	
24,702	2,300	.09 1/2	
26,850	2,500	.14	
28,998	2,700	.23	Opened cracks.

Sheared fibers at edges of compressed section.

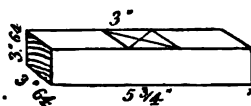
No. 922.—AVA MEXICANA.

(Compressed area, $3''.69 \times 3'' = 11.07$ square inches.)

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
		<i>Inch.</i>	
110	10	.....
4,428	400	.00 $\frac{1}{2}$ —	
8,856	800	.00 $\frac{1}{2}$ —	
11,070	1,000	.01 —	
13,284	1,200	.01 —	
15,498	1,400	.01 $\frac{1}{2}$ —	
17,712	1,600	.01 $\frac{1}{2}$ —	
19,926	1,800	.02 —	
22,140	2,000	.03 $\frac{1}{2}$	
22,247	2,100	.05	$\frac{1}{8}$ " indentation.
24,354	2,200	.06 $\frac{1}{2}$	Opened cracks.
25,461	2,300	.08	Yielding continued.
26,568	2,400	.10	

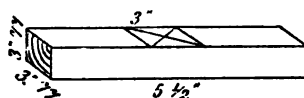
Sheared edges of compressed section.

No. 923.—OREGON ASH.

(Compressed area, $3''.64 \times 3'' = 10.92$ square inches.)

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
		<i>Inch.</i>	
109	10	.....
4,368	400	.0 —	
10,920	1,000	.00 $\frac{1}{2}$ —	
16,368	1,500	.01 —	
21,840	2,000	.03	
22,932	2,100	.03 $\frac{1}{2}$	
24,024	2,200	.05	$\frac{1}{8}$ " indentation.
25,116	2,300	.06	
26,028	2,400	.09	
27,300	2,500	.....	Opened cracks in wood.

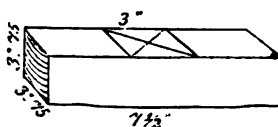
No. 924.—MEXICAN WHITE MAHOGANY.

(Compressed area, $3''.77 \times 3'' = 11.31$ square inches.)

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
		<i>Inch.</i>	
113	10	0	
2,262	200	0	
4,524	400	0	
6,786	600	0	
9,048	800	.00½	
11,310	1,000	.00½	
13,572	1,200	.00½	
15,834	1,400	.01 —	
18,096	1,600	.01	
20,358	1,800	.01½	
22,620	2,000	.03	
23,751	2,100	.04	
24,316	2,150	.05	1/8" indentation.
24,882	2,200	.06	
26,013	2,300	.08	
27,144	2,400	.11	Cracked wood.

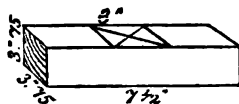
Sheared edges of compressed section.

No. 925.—MEXICAN CEDAR.

(Compressed area, $3''.75 \times 3'' = 11.25$ square inches.)

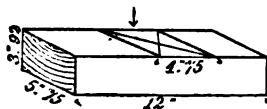
Loads applied.	Pounds per square inch.	Indentation.	Remarks.
		<i>Inch.</i>	
112	10	0	
2,250	200	0 +	
4,500	400	0 +	
6,750	600	0 +	
9,000	800	0 +	
11,250	1,000	.00½	
13,500	1,200	.01 —	
15,750	1,400	.01	
18,000	1,600	.01½	
20,250	1,800	.02½	
21,375	1,900	.04	
21,937	1,950	.05	1/8" indentation.
22,500	2,000	.05½	
23,625	2,100	.09	
24,750	2,200	.13	Sheared fibers at edges of compressed section.

No. 926.—MEXICAN MAHOGANY.

(Compressed area, $3''.75 \times 3'' = 11.25$ square inches.)

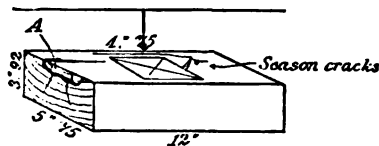
Loads applied.	Pounds per square inch.	Indentation.	Remarks.
		<i>Inch.</i>	
112	10	0	
6,750	600	0 +	
13,500	1,200	.00 +	
20,250	1,800	.00 +	
22,500	2,000	.00 +	
27,000	2,400	.01	
33,750	3,000	.01	
40,500	3,600	.01	
45,000	4,000	.03 -	
49,500	4,400	.07	} Opened cracks in wood, increasing indentation to ".07. 3/8" indentation called 4,500 pounds per square inch.
51,750	4,600	.08 1/2	
54,000	4,800	.10	
56,250	5,000		

No. 575.—OREGON SPRUCE (unseasoned).

(Compressed area, $5''.75 \times 4''.75 = 27''.3$ square inches.)

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
		<i>Inch.</i>	
273	10	0.	Compressed surface indicated by square with diagonals.
2,730	100	0.	
5,460	200	.00 1/2	
8,190	300	.00 1/2 +	
10,920	400	.00 1/2 +	
13,650	500	.01	
16,380	600	.01 1/2	
17,745	650	.01 1/2	
19,110	700	.04	
19,792	725	.05 1/2	3/8" indentation caused by 710 pounds per square inch.
20,475	750	.07	
21,840	800	.09	Opened cracks.
24,570	900		Opened more cracks and reduced the thickness under the compression block to 3''.71, or ".21 in amount.

No. 576.

(Compressed area, $4'' \times 4'' = 16$ square inches.)

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
		<i>Inch.</i>	
190	10	0.	
1,900	100	0.	
3,800	200	0. +	
5,700	300	.00½	
7,600	400	.00½ +	
9,500	500	.01	
11,400	600	.01½	
12,350	650	.03	
12,825	675	.04½	
12,920	680	.05	½" indentation.
13,300	700	.06½	
14,250	750	.08½	
15,200	800	.11½	
17,100	900	.21	Opened cracks at A.

NOTE.—574, 575, 576 off the same piece of lumber.

COMPRESSION OF WOOD PARALLEL TO GRAIN.

No. 927.—OREGON PINE.

Specimen, $6'' \times 2'' \times 2''.46$.Sectional area, $2''.46 \times 2'' = 4.92$ square inches.

Ultimate strength, 41,800 pounds = 8,496 pounds per square inch.

Fibers crumpled and longitudinal crack opened.

No. 928.—OREGON MAPLE.

Specimen, $8'' \times 3''.63 \times 3''.63$.Sectional area, $3''.63 \times 3''.63 = 13.18$ square inches.

Ultimate strength, 87,800 pounds = 6,661 pounds per square inch.

Fibers crushed at end and longitudinal crack opened through a cut that was in the side of the specimen.

No. 929.—CALIFORNIA LAUREL.

Specimen, 8'' long.

Sectional area, $3''.58 \times 3''.58 = 12.8$ square inches.

Ultimate strength, 86,200 pounds = 6,734 pounds per square inch.

Worm-eaten specimen; fibers crumpled.

No. 930.—AVA MEXICANA.

Specimen, 8'' long.

Sectional area, $3''.69 \times 3''.69 = 13.6$ square inches.

Ultimate strength, 86,800 pounds = 6,382 pounds per square inch.

Fibers crumpled and opened at season crack.

No. 931.—OREGON ASH.

Specimen, 8" long.
 Sectional area, $3''.64 \times 3''.64 = 13.2$ square inches.
 Ultimate strength, 67,600 pounds = 5,121 pounds per square inch.
 Specimen not straight grained; fragment split off and fibers failed by buckling at part of specimen in vicinity of knots.

No. 932.—MEXICAN WHITE MAHOGANY.

Length, 8".
 Sectional area, $3''.77 \times 3''.77 = 14.2$ square inches.
 Ultimate strength, 87,400 pounds = 6,155 pounds per square inch.
 Fibers crumpled and opened cracks.

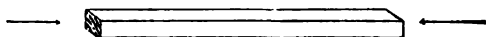
No. 933.—MEXICAN CEDAR.

Length, 8".
 Sectional area, $3''.75 \times 3''.75 = 14$ square inches.
 Ultimate strength, 67,400 pounds = 4,814 pounds per square inch.
 Fibers crumpled at very ends of block.

No. 934.—MEXICAN MAHOGANY.

Length, 8".
 Sectional area, $3''.72 \times 3''.75 = 14$ square inches.
 Ultimate strength, 140,600 pounds = 10,043 pounds per square inch.
 Opened oblique cracks and buckled fibers.

No. 945.—OREGON PINE.



Length, 19''.9.
 Sectional area, $1''.21 \times 1''.21 = 1.46$ square inch.
 Ultimate strength, 13,200 pounds = 9,041 pounds per square inch.
 Failed by bending as a pillar.
 Test of same, 3''.9 long: Ultimate strength, 15,600 pounds = 10,685 pounds per square inch.

No. 946.—OREGON PINE.

Length, 19''.9.
 Sectional area, $1''.21 \times 1''.21 = 1.46$ square inch.
 Ultimate strength, 12,050 pounds = 8,253 pounds per square inch.
 Failed by bending as a pillar.
 Test of same, 3''.9 long: Ultimate strength, 12,100 pounds = 8,288 pounds per square inch.

II. Ex. 12—3

No. 574.—OREGON SPRUCE (UNSEASONED).



Sectional area 22.572

Loads applied.	Length of specimen.	Compression.	Remarks.
	<i>Inches.</i>	<i>Inches.</i>	
1,000	24.02	574, 575, 576 off same piece of lumber.
10,000	.01½	.00½	
30,000	.....	.02½
50,000	.....	.03
1,000	24.02	0.	
80,00005	
1,000	.....	0.
100,000	.....	.06
10,000	.....	.00½
120,000	.....	.07½
1,000	.....	.01 +
130,100	= 5,772 pounds per square inch, ultimate strength.

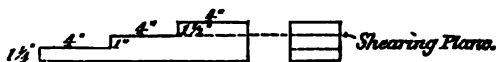
Specimen failed by deflecting sideways; fibers buckled on concave side.

Sound end cut off 10" long, and again put into testing machine and compressed, with the following result:

Ultimate strength, 128,000 pounds = 5,679 pounds per square inch.

Fibers buckled.

SHEARING STRENGTH OF WOOD PARALLEL TO GRAIN.



(Form of specimens.)

No. 935.—OREGON PINE.

Shearing plane perpendicular to rings of growth.

Shearing area, 4" × 3".48 = 13.92 square inches.

Ultimate strength, 6,150 pounds = 442 pounds per square inch.

No. 936.—OREGON MAPLE.

Shearing plane perpendicular to rings.

Shearing area, 3".97 × 3".63 = 14.4 square inches.

Ultimate strength, 6,280 pounds = 436 pounds per square inch.

No. 937.—CALIFORNIA LAUREL.

Shearing plane oblique to rings.

Shearing area, 3".96 × 3".58 = 14.2 square inches.

Ultimate strength, 7,790 pounds = 549 pounds per square inch.

No. 938.—AVA MEXICANA.

Shearing plane perpendicular to rings.

Shearing area, $4'' \times 3''.69 = 14.76$ square inches.

Ultimate strength, 5,100 pounds = 346 pounds per square inch.

No. 939.—OREGON ASH.

Shearing plane parallel to rings.

Shearing area, $4'' \times 3''.64 = 14.56$ square inches.

Ultimate strength, 6,450 pounds = 443 pounds per square inch.

No. 940.—MEXICAN WHITE MAHOGANY.

Shearing plane oblique to rings.

Shearing area, $4'' \times 3''.77 = 15.08$ square inches.

Ultimate strength, 6,600 pounds = 438 pounds per square inch.

No. 941.—MEXICAN CEDAR.

Shearing plane perpendicular to rings.

Shearing area, $4'' \times 3''.75 = 15$ square inches.

Ultimate strength, 6,350 pounds = 423 pounds per square inch.

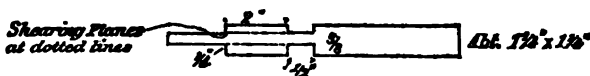
No. 942.—MEXICAN MAHOGANY.

Shearing plane parallel to rings.

Shearing area, $3'' \times 3''.75 = 15$ square inches.

Ultimate strength, 8,490 pounds = 566 pounds per square inch.

No. 943.—OREGON PINE.



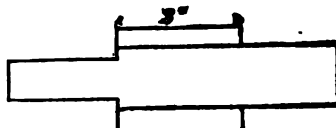
Shearing area, $1''.97 \times 1''.27 \times 2 = 5$ square inches.

Ultimate strength, 5,480 pounds = 1,096 pounds per square inch.

No. 944.—OREGON PINE.

Same form and shearing area as No. 943.

Ultimate strength, 4,990 pounds = 998 pounds per square inch.



(Form of specimens.)

No. 947.—OREGON PINE.

Same specimen as No. 935.

Shearing planes oblique to rings of growth.

Shearing area, $3'' \times 1''.79 \times 2 = 10.74$ square inches.

Ultimate strength, 8,800 pounds = 820 pounds per square inch.

No. 948.—OREGON MAPLE.

Specimen cut out of No. 936.

Shearing planes oblique to rings.

Shearing area, $3''.02 \times 1''.8 \times 2 = 10.9$ square inches.

Ultimate strength, 11,200 pounds = 1,028 pounds per square inch.

No. 949.—CALIFORNIA LAUREL.

Specimen cut out of No. 937.

Shearing planes oblique to rings.

Shearing area, $3''.03 \times 1''.82 \times 2 = 11$ square inches.

Ultimate strength, 13,250 pounds = 1,204 pounds per square inch.

No. 950.—AVA MEXICANA.

Specimen cut out of No. 938.

Shearing planes parallel to rings.

Shearing area, $3''.03 \times 1''.81 \times 2 = 11$ square inches.

Ultimate strength, 7,700 pounds = 700 pounds per square inch.

No. 951.—OREGON ASH.

Specimen cut from No. 939.

Shearing planes perpendicular to rings.

Shearing area, $3''.03 \times 1''.36 \times 2 = 8.24$ square inches.

Ultimate strength, 9,280 pounds = 1,126 pounds per square inch.

One side sheared off in advance of the other.

No. 952.—MEXICAN WHITE MAHOGANY.

Specimen cut from No. 940.

Shearing planes oblique to rings.

Shearing area, $3''.02 \times 1''.82 \times 2 = 11$ square inches.

Ultimate strength, 11,000 pounds = 1,000 pounds per square inch.

Specimen yielded and cracked before final fracture.

No. 953.—MEXICAN CEDAR.

Specimen cut from No. 941.

Shearing area, $3''.02 \times 1''.62 \times 2 = 9.8$ square inches.

Shearing plane parallel to rings.

Ultimate strength, 7,980 pounds = 814 pounds per square inch.

No. 954.—MEXICAN MAHOGANY.

Specimen cut from 942.

Shearing plane perpendicular to rings.

Shearing area, $3''.04 \times 1''.82 \times 2 = 11.1$ square inches.

Ultimate strength, 14,800 pounds = 1,333 pounds per square inch.

No. 640.—OREGON SPRUCE.

This specimen got out of 576.

Shearing parallel with rings. Shearing plane through the middle of the block ($2''$ from each of the original faces).

Area, $6'' \times 5''.75 = 34.5$ square inches.

Ultimate strength, about 9,000 pounds = 261 pounds per square inch.

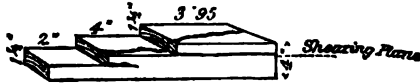
No. 641.—OREGON SPRUCE.



Shearing plane parallel with rings.

Area, $3'' .95 \times 5'' .8 = 22.91$ square inches.

Ultimate strength, 8,150 pounds = 356 pounds per square inch.



Sheared off part of upper section, as shown by sketch, and part of middle section.

No. 642.—OREGON SPRUCE.

Part of 641.

Shearing plane perpendicular to rings.

Area, $4'' \times 1'' .38 = 5.52$ square inches.

Ultimate strength, 1,740 pounds = 315 pounds per square inch.

TENSILE TESTS OF WOOD.

No. 1017.—OREGON PINE.

Conical ends of specimen.

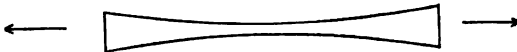
White-wood ends glued on pine stick.

Diameter of specimen, $'' .64$. Sectional area, .32 square inch.

Ultimate strength, 4,420 pounds = 13,810 pounds per square inch.

Broke at middle of specimen.

No. 740.—OREGON SPRUCE.



Diameter at middle, $1'' .02$.

Sectional area, .82 square inch.

Ultimate strength, 13,250 pounds = 16,160 pounds per square inch.

Transverse strength of California wood.

	Wood.	Length.	Width.	Depth.	Ultimate strength.	Remarks.
		<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Pounds.</i>	
861	Oregon Pine	48	3.48	3.48	7,600	
955	do	22" bet. end supports.	1.24	1.23	745	Cross-grained.
956	do	22" bet. end supports.	1.21	1.20	875	
862	Oregon Maple	48	3.63	3.63	7,650	
863	California Laurel	48	3.58	3.58	6,200	Worm-eaten.
864	Ava Mexicana	48	3.69	3.69	7,560	
865	Oregon Ash	48	3.64	3.64	6,180	Cross-grained.
866	Mexican White Mahogany (Primavera Mexicana)	48	3.77	3.77	7,800	
867	Mexican Cedar	48	3.75	3.75	6,340	
868	Mexican Mahogany	48	3.75	3.75	12,650	

Compression.

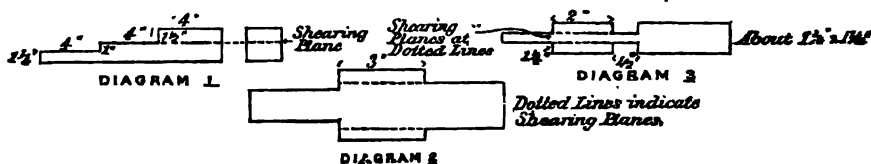
PERPENDICULAR TO GRAIN.

	Wood.	Compressed area.		Indentation.	Remarks.
		Inches.	Sq. in.		
919	Oregon Pine	3.45 × 3	= 10.35	1,150	
920	Oregon Maple	3.63 × 3	= 10.89	1,875	
575	Oregon Spruce	5.75 × 4.75	= 27.3	710	
576	do	4.75 × 4	= 19	680	
921	California Laurel	3.58 × 3	= 10.74	2,000	
922	Ava Mexicana	3.69 × 3	= 11.07	2,100	
923	Oregon Ash	3.64 × 3	= 10.92	2,200	
924	Mexican White Mahogany	3.77 × 3	= 11.31	2,150	
925	Mexican Cedar	3.75 × 3	= 11.25	1,850	
926	Mexican Mahogany	3.75 × 3	= 11.25	4,500	

PARALLEL TO GRAIN.

	Wood.	Length.	Sectional area.		Ultimate strength.	Remarks.
			Inches.	Sq. in.		
927	Oregon Pine	6.5	2.46 × 2	= 4.92	8,496	
945	do	19.9	1.21 × 1.21	= 1.46	9,041	
946	do	19.9	1.21 × 1.21	= 1.46	8,253	
928	Oregon Maple	8.	3.63 × 3.63	= 13.18	6,661	
574	Oregon Spruce	24.02	3.92 × 5.75	= 22.54	5,772	
929	California Laurel	8.	3.58 × 3.58	= 12.8	6,734	
930	Ava Mexicana	8.	3.69 × 3.69	= 13.6	6,382	
931	Oregon Ash	8.	3.64 × 3.64	= 13.2	5,121	
932	Mexican White Mahogany	8.	3.77 × 3.77	= 14.2	6,155	
933	Mexican Cedar	8.	3.75 × 3.75	= 14.	4,814	
934	Mexican Mahogany	8.	3.75 × 3.75	= 14.	10,043	

Shearing strength of wood. Parallel to grain.



	Wood.	Shearing area.		Direction to rings of growth.	Ultimate strength.	Ultimate strength per sq. inch.	Remarks.
		Inches.	Sq. in.				
935	Oregon Pine	4. × 3.48	= 13.92	Perpendicular ..	6,150	443	1
943	do	1.97 × 1.27 × 2	= 5.	do	5,480	1,096	3
944	do	1.97 × 1.27 × 2	= 5.	do	4,990	998	3
947	do	3. × 1.79 × 2	= 10.74	Oblique	8,800	820	1
936	Oregon Maple	3.97 × 3.63	= 14.4	Perpendicular ..	6,280	436	1
948	do	3.02 × 1.8 × 2	= 10.9	Oblique	11,260	1,028	1
937	California Laurel	3.96 × 3.58	= 14.2	do	7,790	549	1
949	do	3.03 × 1.82 × 2	= 11.	do	13,250	1,204	1
938	Ava Mexicana	4. × 3.69	= 14.76	Perpendicular ..	5,100	346	1
950	do	3.03 × 1.81 × 2	= 11.	Parallel	7,700	700	1
939	Oregon Ash	4. × 3.64	= 14.56	do	6,450	443	1
951	do	3.03 × 1.86 × 2	= 8.24	Perpendicular ..	9,280	1,126	1
940	Mexican White Mahogany	4. × 3.77	= 15.08	Oblique	6,600	438	1
952	do	2.02 × 1.82 × 2	= 11.	do	11,000	1,000	1
941	Mexican Cedar	4. × 3.75	= 15.	Perpendicular ..	6,350	433	1
953	do	2.02 × 1.62 × 2	= 9.8	Parallel	7,980	814	1
942	Mexican Mahogany	4. × 3.75	= 15.	do	8,490	566	1
954	do	3.04 × 1.82 × 2	= 11.1	Perpendicular ..	14,800	1,333	1
640	Oregon Spruce	6. × 5.75	= 34.5	Parallel	9,000	361	...
641	do	3.95 × 5.8	= 22.91	do	8,150	356	...
642	do	4. × 1.38	= 5.52	Perpendicular ..	1,740	315	...

Tensile tests of wood.

	Wood.	Diameter.	Sectional area.	Ultimate strength.	Ultimate strength per sq. inch	Remarks.
		<i>Inch.</i>	<i>Sq. inch.</i>	<i>Pounds.</i>	<i>Pounds.</i>	
1017	Oregon Pine .....	.64	.32	4,420	13,810	
740	Oregon Spruce	1.02 at middle.	.82	13,250	16,160	

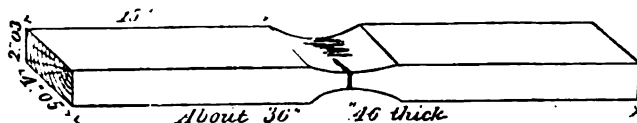
D.—Tensile strength of wood.—Tabulation of results.

Number of test.	Kind of wood.	Diameter of specimen.	Sectional area.	Ultimate strength per sq. inch.	Appearance of fracture.
		<i>Inches.</i>	<i>Sq. in.</i>	<i>Pounds.</i>	
734	Yellow Pine .....	.88	.608	15,790	
859	do .....	.98	.75	12,066	Short and brittle.
860	do .....	.98	.75	16,133	Do.
869	do .....	.99	.77	17,922	Good fibrous fracture.
1017	Oregon Pine .....	.64	.32	13,810	
662	White Pine	1.25	1.227	5,300	
870	do .....	.99	.77	8,961	Square fracture; did not break at minimum section.
871	do .....	.99	.77	10,104	Square fracture.
872	do .....	.99	.77	11,299	Irregular fracture.
739	Spruce	1.02	.82	11,600	Broke at knot.
873	do	1.00	.785	17,044	Irregular fibrous.
874	do .....	.99	.77	11,689	Square break.
875	do .....	.98	.75	16,800	Fibrous.
876	White Wood .....	.98	.75	7,466	Do.
877	do .....	.98	.75	6,107	Irregular break.
887	Gum Wood .....	.98	.75	19,138	Short fibrous.
888	do	1.00	.785	4,586	Short and brittle.
889	do .....	.98	.75	19,400	Long fibrous.
890	do .....	.98	.75	14,133	Fibrous.
881	White Maple	1.01	.80	7,312	Oblique fracture.
882	do .....	.98	.75	10,467	Do.
883	do .....	.99	.77	15,714	Square break.
884	Black Walnut	1.00	.785	14,650	Do.
885	do .....	.97	.74	10,540	Do.
886	do .....	.99	.77	9,286	Do.
878	Red Birch .....	.97	.74	22,838	Long fibrous fracture.
879	do .....	.97	.74	19,324	Fibrous and square break.
880	do	1.00	.785	13,885	Short; grain not straight.
891	White Ash .....	.98	.75	25,867	Fibrous.
892	do .....	.99	.77	18,961	Do.
893	do .....	.99	.77	27,532	Long fibrous fracture.
894	Brown Ash .....	.98	.75	11,733	Square break.
895	do .....	.98	.75	10,667	Do.
896	do .....	.99	.77	11,558	Do.
733	White Oak	1.00	.785	12,670	Not straight grained.
897	do .....	.98	.75	18,667	Long fibrous fracture.
898	do .....	.97	.74	22,703	Do.
899	do .....	.98	.75	15,600	Square break.
902	Red Oak .....	.98	.75	12,133	Do.
903	do .....	.98	.75	10,640	Do.
904	do .....	.98	.75	7,600	Short brittle fracture.
900	Yellow Oak .....	.99	.77	20,260	Long fibrous fracture.
901	do .....	.99	.77	20,520	Do.
905	Hickory .....	.98	.75	15,974	Oblique fracture.
906	do .....	.98	.75	12,400	Do.
907	do .....	.99	.77	19,610	Square fracture.

TENSILE STRENGTH OF WOOD.

458.—OAK.

Specimen cut from white oak plank which had been kept in store-house over 15 years.



Sectional area, 1.86 square inches.

Holder pressure on 60 square inches, 120,000 pounds = 2,000 pounds per square inch. This pressure was sufficient to crush ends and reduce thickness about ".05.

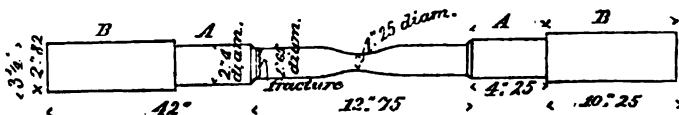
Ultimate strength, 31,400 pounds = 16,890 pounds per square inch.

Fracture began at heart of wood, which broke square apart for $1\frac{5}{8}$ " width; the remainder of the specimen broke with ragged fracture.

NOTE.—A specimen of the same wood (sap wood) of circular section 8" diameter, sustained a total load of 13,950 pounds = 27,900 pounds per square inch, without fracture. It pulled out core $17\frac{1}{4}$ " long.

Hence shearing strength along fibres = 320 pounds per square inch.

661.—YELLOW PINE.



Sections A inclosed by dies and tensile strain received against rounded corners.

Sections B pressed between flat dies, compressing the ends $\frac{1}{4}$ " total.

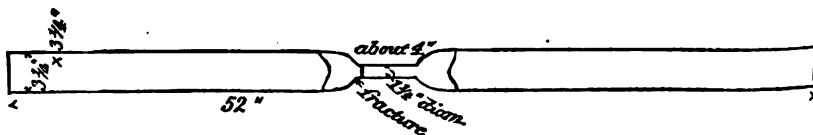
Sectional area, 1.227 square inches.

Ultimate strength, 24,500 pounds = 19,970 pounds per square inch on minimum section.

Broke at shoulder.

Load per square inch at fractured section, 11,450 pounds.

662.—WHITE PINE.



Sectional area, 1.227 square inches.

Ends held by friction dies covering 47 square inches ($14\frac{1}{2}$ " \times $3\frac{1}{4}$ ").

Ultimate strength, about 6,500 pounds = 5,300 per square inch.

663.—SPRUCE.

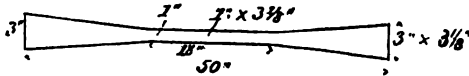


Sectional area, 2.22 square inches.

Sustained 10,000 pounds (= 4,500 pounds per square inch) without fracture.

Specimen slipped in dies. Holder pressure increased, and ends crushed under load of about 1,000 pounds per square inch.

664.—YELLOW PINE.



Sectional area, 3.12 square inches.

Die plates clamped in holders so as to form wedge-shaped jaws, into which the specimen was placed.

Die plates slipped at 19,100 pounds (Holder pressure, 380,000 pounds), allowing the specimen to draw through.

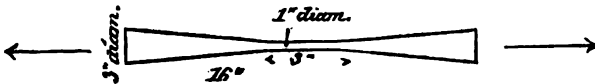
Specimen reduced to 1.9 x 1" at middle.

Sectional area 1.9 square inches.

Sustained 17,000 (= 8,950 pounds per square inch) pounds, without fracture.

The specimen not being confined on upper and lower sides, the pressure of the wedge spread one end and split open fibers of the wood.

733.—WHITE OAK.



Sectional area, .785 square inch.

Ultimate strength, 9,950 pounds = 12,670 pounds per square inch.

Fractured away from middle. Specimen not straight-grained.

734.—YELLOW PINE.

Same form as 733, except that ends were 12" long.

Diameter at center, ".88.

Sectional area, .608 square inch.

Ultimate strength, 9,600 pounds = 15,790 pounds per square inch.

Fractured in middle of specimen.

739.—SPRUCE.

Specimen 16" long, with conical ends.

Diameter at middle, 1'.02.

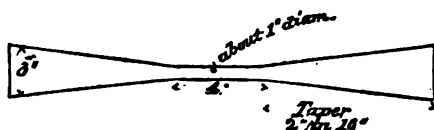
Sectional area, .82 square inch.

Ultimate strength, 9,500 pounds = 11,600 pounds per square inch.

Fractured at middle at small knot of ".02 diameter, which was in side of specimen.

Cracks opened in specimen after load reached 8,000 pounds total load, which increased till final rupture took place suddenly.

859.—YELLOW PINE (SOUTHERN).



Diameter, ".98. Sectional area, .75 square inch.
 Ultimate strength, 9,050 pounds = 12.066 pounds per square inch.
 Fracture short and brittle.

860.—YELLOW PINE (SOUTHERN).

Diameter, ".98. Area, .75 square inch.
 Ultimate strength, 12,100 pounds = 16,133 pounds per square inch.
 Fracture similar to 859.

Specimens with conical ends.

Part tested about 1" diameter and 4" long.

869.—YELLOW PINE.

Diameter, ".99. Sectional area, .77 square inch.
 Ultimate strength, 13,800 pounds = 17,922 pounds per square inch.
 Good fibrous fracture.

870.—WHITE PINE.

Diameter, ".99. Sectional area, .77 square inch.
 Ultimate strength, 6,900 pounds = 8,961 pounds per square inch.
 Square fracture; did not break at minimum section.

871.—WHITE PINE.

Diameter, ".99. Sectional area, .77 square inch.
 Ultimate strength, 7,780 pounds = 10,104 pounds per square inch.
 Square fracture at minimum section.

872.—WHITE PINE.

Diameter, ".99. Sectional area, .77 square inch.
 Ultimate strength, 8,700 pounds = 11,299 pounds per square inch.
 Irregular fracture at middle.

873.—SPRUCE.

Diameter, 1". Sectional area, .785 square inch.
 Ultimate strength, 13,380 pounds = 17,044 pounds per square inch.
 Irregular fibrous fracture.

874.—SPRUCE.

Diameter, ".99. Sectional area, .77 square inch.
 Ultimate strength, 9,000 pounds = 11,689 pounds per square inch.
 Square fracture; not fibrous.

875.—SPRUCE.

Diameter, ".98. Sectional area, .75 square inch.
Ultimate strength, 12,600 pounds=16,800 pounds per square inch.
Good fibrous fracture.

876.—WHITE WOOD.

Diameter, ".98. Sectional area, .75 square inch.
Ultimate strength, 5,600 pounds=7,466 pounds per square inch.
Irregular fibrous fracture.

877.—WHITE WOOD.

Diameter, ".98. Sectional area, .75 square inch.
Ultimate strength, 4,580 pounds=6,107 pounds per square inch.
Irregular fracture.

878.—RED BIRCH.

Diameter, ".97. Sectional area, .74 square inch.
Ultimate strength, 16,900 pounds=22,838 pounds per square inch.
Long fibrous fracture.

879.—RED BIRCH.

Diameter, ".97. Sectional area, .74 square inch.
Ultimate strength, 14,300 pounds=19,324 pounds per square inch.
Fibrous fracture in part; square across 60 per cent.

880.—RED BIRCH.

Diameter, 1". Sectional area, .785 square inch.
Ultimate strength, 10,900 pounds=13,885 pounds per square inch.
Short fracture; grain not straight.

881.—WHITE MAPLE.

Diameter, 1".01. Sectional area, .8 square inch.
Ultimate strength, 5,850 pounds=7,312 pounds per square inch.
Fracture oblique; 60 per cent. following grain; square across 40 per cent.

882.—WHITE MAPLE.

Diameter, ".98. Sectional area, .75 square inch.
Ultimate strength, 7,850 pounds=10,467 pounds per square inch.
Fracture square 60 per cent.; oblique following grain 40 per cent.

883.—WHITE MAPLE.

Diameter, ".99. Sectional area, .77 square inch.
Ultimate strength, 12,100 pounds=15,714 pounds per square inch.
Fracture slightly irregular, square across.

884.—BLACK WALNUT.

Diameter, 1". Sectional area, .785 square inch.
Ultimate strength, 11,500 pounds=14,650 pounds per square inch.
Fracture slightly irregular, square across.

885.—BLACK WALNUT.

Diameter, ".97. Sectional area, .74 square inch.
Ultimate strength, 7,800 pounds = 10,540 pounds per square inch.
Fracture same as 884, except darker in color.

886.—BLACK WALNUT.

Diameter, ".99. Sectional area, .77 square inch.
Ultimate strength, 7,150 pounds = 9,286 pounds per square inch.
Fracture same as 885.

887.—GUM WOOD.

Diameter, ".98. Sectional area, .75 square inch.
Ultimate strength, 14,350 pounds = 19,133 pounds per square inch.
Short fibrous fracture.

888.—GUM WOOD.

Diameter, 1". Sectional area, .785 square inch.
Ultimate strength, 3,600 pounds = 4,586 pounds per square inch.
Fracture short and brittle.

889.—GUM WOOD.

Diameter, ".98. Sectional area, .75 square inch.
Ultimate strength, 14,550 pounds = 19,400 pounds per square inch.
Long fibrous fracture.

890.—GUM WOOD.

Diameter, ".98. Sectional area, .75 square inch.
Ultimate strength, 10,600 pounds = 14,133 pounds per square inch.
Fibrous fracture.

891.—WHITE ASH.

Diameter, ".98. Sectional area, .75 square inch.
Ultimate strength, 19,400 pounds = 25,867 pounds per square inch.
Fibrous fracture.

892.—WHITE ASH.

Diameter, ".99. Sectional area, .77 square inch.
Ultimate strength, 14,600 pounds = 18,961 pounds per square inch.
Fibrous fracture.

893.—WHITE ASH.

Diameter, ".99. Sectional area, .77 square inch.
Ultimate strength, 21,200 pounds = 27,532 pounds per square inch.
Long fibrous fracture.

894.—BROWN ASH.

Diameter, ".98. Sectional area, .75 square inch.
Ultimate strength, 8,800 pounds = 11,733 pounds per square inch.
Square fracture, not fibrous.

895.—BROWN ASH.

Diameter, ".98. Sectional area, .75 square inch.
Ultimate strength, 8,000 pounds = 10,667 pounds per square inch.
Fracture same as 894.

896.—BROWN ASH.

Diameter, ".99. Sectional area, .77 square inch.
Ultimate strength, 8,900 pounds = 11,558 pounds per square inch.
Fracture same as 894.

897.—WHITE OAK.

Diameter, ".98. Sectional area, .75 square inch.
Ultimate strength, 1,400 pounds = 18,667 pounds per square inch.
Long fibrous fracture.

898.—WHITE OAK.

Diameter, ".97. Sectional area, .74 square inch.
Ultimate strength, 16,800 pounds = 22,703 pounds per square inch.
Long fibrous fracture.

899.—WHITE OAK.

Diameter, ".98. Sectional area, .75 square inch.
Ultimate strength, 11,700 pounds = 15,600 pounds per square inch.
Square break; not fibrous.

900.—YELLOW OAK.

Diameter, ".99. Sectional area, .77 square inch.
Ultimate strength, 15,600 pounds = 20,260 pounds per square inch.
Long fibrous fracture.

901.—YELLOW OAK.

Diameter, ".99. Sectional area, .77 square inch.
Ultimate strength, 15,800 pounds = 20,520 pounds per square inch.
Long fibrous fracture.

902.—RED OAK.

Diameter, ".98. Sectional area, .75 square inch.
Ultimate strength, 9,100 pounds = 12,133 pounds per square inch.
Short square fracture.

903.—RED OAK.

Diameter, ".98. Sectional area, .75 square inch.
Ultimate strength, 7,980 pounds = 10,640 pounds per square inch.
Fracture same as 902.

904.—RED OAK.

Diameter, ".98. Sectional area, .75 square inch.
Ultimate strength, 5,700 pounds = 7,600 pounds per square inch.
Short brittle fracture.

905.—HICKORY.

Diameter, ".99. Sectional area, .77 square inch.
 Ultimate strength, 12,300 pounds=15,974 pounds per square inch.
 Oblique fracture. Result gives tensile combined with shearing strength instead of direct tensile strength.

906.—HICKORY.

Diameter, ".98. Sectional area, .75 square inch.
 Ultimate strength, 9,300 pounds=12,400 pounds per square inch.
 Oblique shearing fracture 60 per cent.; square break 40 per cent.

907.—HICKORY.

Diameter, ".99. Sectional area, .77 square inch.
 Ultimate strength, 15,100 pounds=19,610 pounds per square inch.
 Square fracture, slightly irregular, across specimen.

1017.—OREGON PINE.

Diameter, ".64. Sectional area, .32 square inch.
 Ultimate strength, 4,420 pounds=13,810 pounds per square inch.

STRENGTH OF TIMBER. POSTS.

565.—SPRUCE.



Seasoning crack A, $\frac{1}{4}$ " wide. Sectional area, 28.89 square inches.

Loads applied.	Length of specimen.	Compression.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	
1,000	23.98	Gaugings taken between steel die-plate faces which pressed against ends of post.
10,000	.965	.015	
20,000	.96	.02	
30,000	.955	.025	
40,000	.95 +	.03 -	Crackling sound at 68,000 pounds.
1,000	.98	0.	
50,000	.95 -	.08 +	
60,000	.945	.035	
70,000	.94 -	.04 +	
80,000	.935	.045	
1,000	.98	0.	
90,000	.925	.055	
100,000	.92	.06	=4,946 pounds per square inch. Ultimate strength.
110,000	.91	.07	
120,000	.905	.075	
1,000	.975	.005	
142,900	Sustained when test was finished.
73,000	.....	.....
0	23.80	.18	

Cracking sounds frequently heard after 68,000 pounds was passed. Column failed by bulging at the middle. Opened season cracks wider. Apparent cause of failure being the crumpling of the wood and separation of the fibers at the knots where the grain did not run parallel with the line of pressure.

Knots about 1 inch to $1\frac{1}{8}$ inch diameter.

566.—Same size as 565.

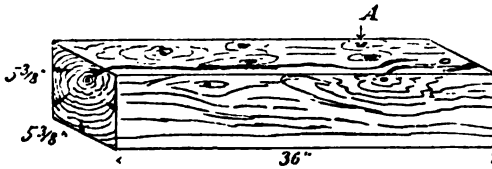
Sectional area, 28.89 square inches.

Loads applied.	Length of specimen.	Compression.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	
1,000	23.96	.....
100,000	.905	.055	
139,000	.....	.....	=4,811 pounds per square inch. Ultimate strength.

Column failed by bulging at the middle, the same as 565.

Crippling continued till column was permanently shortened $\frac{1}{8}$ inch. Wood most injured 7 inches from end, at a place where a knot was in each face; the fibers separating and crumpling.

567.



Sectional area, 28.89 square inches.

Loads applied.	Length of specimen.	Compression.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	
1,000	36.04	.....
10,000	.03 -	.01 +	
50,000	35.99	.05	
1,000	36.035	.005	
80,000	35.97	.07	
100,000	.96 +	.09 -	
1,000	36.03 +	.01 -	
120,000	35.93	.11	
130,000	.92	.12	
1,000	36.025	.015	
140,800	.....	.....	=4,874 pounds per square inch. Ultimate strength.

Column failed by bulging at the knots A, similar to the failure of the 24 inch columns.

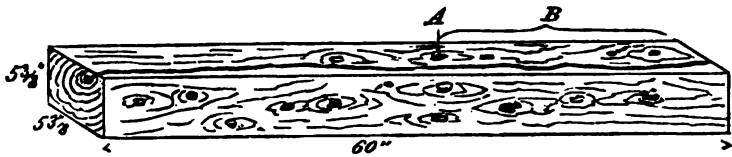
568.—Same size as 567.

Seasoning cracks as in others. Sectional area, 28.89 square inches.

Loads applied.	Length of specimen.	Compression.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	
1,000	36.025	.....
10,000	.015	.01	
50,000	35.985	.04	
1,000	36.025	0.	
80,000	35.96	.065	
100,000	.94	.085	
1,000	36.02	.005	
120,000	35.92	.105	
130,000	.....	.....	Cracks opened around knots.
			=4,500 pounds per square inch. Ultimate strength. Gradual yielding under this load.

Column failed by crumpling at knots from 4 inches to 8 inches from the end.

569.



Sectional area, 28.89 square inches. Season crack about ".2 wide.

Loads applied.	Length of specimen.	Compression.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	
1,000	60.01		
10,000	59.995	.015	
50,000	.945	.075	
1,000	60.01	0.	
80,000	59.91	.10 +	Opened longitudinal cracks at 60,000 pounds.
100,000	.875	.135	= 4,451 pounds per square inch. Ultimate strength.
128,800			

Column failed by the fibers crumpling at knots A, and the grain opening at section B by bulging.

570.—Same size as 569.

Sectional area, 28.89 square inches. Season cracks same as in other columns.

Loads applied.	Length of specimen.	Compression.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	
1,000	60.02		
10,000	.01 +	.02 -	
50,000	59.98	.07	
1,000	60.03 -	.00 +	
80,000	59.92 +	.11 -	
100,000	59.985	.135	
1,000	60.025	.005	
142,800			= 4,943 pounds per square inch. Ultimate strength.

Column yielded at knots, 16 inches from the end. Fibers crumpled and column bent downward taking a sharp bend at the knots.

571.



Sectional area, 28.89 square inches. Maximum width of seasoning cracks, $\frac{1}{4}$ ".

Loads applied.	Length of specimen.	Compression.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	
1,000	120		Gauging blocks clamped on to post 100" apart, and gaugings taken with Vernier calipers.
10,000	.....	.018
50,000	.....	.104
1,000	.....	.001
80,000	.....	.170
1,000	.....	.003
90,000	.....	.197
1,000	.....	.005
100,000	.....	.223
1,000	.....	.008
114,600	.....	
			= 3,967 pounds persquare inch. Ultimate strength.

Column failed by deflecting downward.

The deflection appeared uniform to the eye till it had reached about 1 inch deflection at the middle, after which the bending was sharpest at A, 40 inches from the end. Deflection was increased till the outside fibers of the column broke under tension and transverse load at the point 40 inches from the end. Load released, and permanent deflection at A was 2.4 inches.

572.—Same size as 571.

Sectional area, 28.89 square inches.

Loads applied.	Length of specimen.	Compression.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	
1,000	120		Gaugings read with vernier calipers. Blocks 100" apart.
10,000014	
50,000089	
1,000001	
80,000145	
1,000001	
90,000186	
1,0000015	
100,000186	
1,000002 +	
110,000206	
1,0000035	
120,000227	
1,000005	
130,000246	
1,000007	
141,800		= 4,908 pounds per square inch. Ultimate strength.

Column failed by bending upward. Took sharp deflection 36 inches from the end at some knots. Wood buckled on concave side.

Specimen cut at middle and sound end again tested. Length, 60 inches.

Ultimate strength, 152,400 pounds = 5,275 pounds per square inch.

Failed at knots, 4 inches and 6 inches from the end.

Specimen cut again into halves, and the sound end placed in machine and tested. Length, 30 inches.

Ultimate strength, 155,200 pounds = 5,372 pounds per square inch.

Failed at largest knots, 3 inches to 6 inches from end.

Specimen again cut into halves and sound end tested.

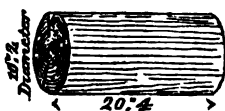
Length, 15 inches. Ultimate strength, 166,300 pounds = 5,754 pounds per square inch.

Failed at knots close by ends.

NOTE.—Specimen 572 had larger season cracks than 571, but the knots in it—which appear to limit the strength of the post—were smaller than those of 571.

H. Ex. 12—4

573.—YELLOW PINE POST.

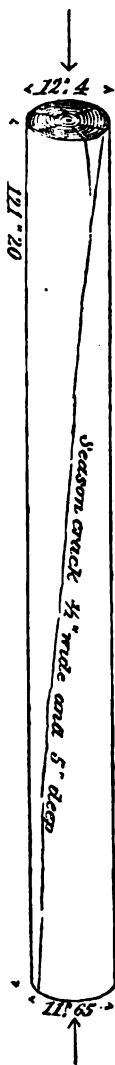


Sectional area, 81.7 square inches.

Loads applied.	Length of Specimen.	Compression.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	
10,000	20.40	Specimen straight grained; free from knots; about 86 rings of growth shown on specimen.
100,000	.36	.04	
200,000	.34	.06	
300,000	.32	.08	
500,000	.27	.13	
1,000	.36	.04	= 6,676 pounds per square inch. Ultimate strength.
545,400	.....	.....

Specimen failed by opening longitudinal seams and crushing or **crumpling** the fibers in spiral lines around surface.

577.—SPRUCE POST.



Sectional area (at smaller end), 106.6 square inches.

Loads applied.	Length of specimen.	Compression.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	
10,000	121.17		Post has initial bend of $\frac{1}{4}$ " at middle.
50,000	.155	.015	Gangings read with steel scale.
100,000	.12	.05	
150,000	.08	.09	
200,000	.06	.11	
10,000	.17	0.	
250,000	.025	.145	Timber began cracking at 220,000 pounds.
10,000	.17	0.	
300,000	120.99	.18	

577.—*Spruce post*—Continued.

Loads applied.	Length of specimen.	Compression.	Remarks.
<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>	
10,000	121.17	0.	
350,000	120.96	.21	
10,000	121.17	0.	
400,000	120.93	.24	
10,000	121.17	0.	
450,000	120.89	.28	
10,000	121.17	0.	
475,000	120.87	.30	
10,000	121.16	.01	
499,000			= 4,681 pounds per square inch, ultimate strength.

Post failed at a $1\frac{1}{2}$ -inch knot, 32 inches from the smaller end on the concave side, and at a knot 4 inches from the same end on the convex side. The fibers of the timber buckled and opened cracks about the knots and longitudinally. The large season-cracks did not weaken the post enough to cause any failure of the timber from that cause.

578.—YELLOW PINE POST.



Sectional area, 120.6 square inches.

Gaugings taken with vernier calipers between rods in contact with cast-iron compression platforms of testing machine.
Timber free from knots.

Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inches.</i>	
10,000				
100,000		.049		
10,000			.0005	
50,000		.073		
10,000			.001	
200,000		.097		
10,000			.002	
250,000		.122		
10,000			.003	
300,000		.148		
10,000			.004	
350,000		.172		
10,000			.005	
400,000		.198		
10,000			.006	
450,000		.224		
10,000			.008	
475,000		.239		
10,000			.0105	
500,000		.254		
10,000			.013	
525,000		.269		
10,000			.016	
550,000		.286		
10,000			.019	
575,000		.303		
10,000			.023	
600,000		.323		
10,000			.027	
625,000		.342		
10,000			.033	
650,000		.363		
10,000			.039	
675,000		.390		
10,000			.048	
700,000		.422		
10,000			.059	
725,000				
10,000			.072	
751,400	6,230			Ultimate strength.

Column failed by the fibers of the wood buckling, commencing at a point 13 inches from the end of column where the grain of the wood was wavy.

581.—YELLOW PINE.

Dimensions, $10.96 \times 10.96 \times 119.90$ inches.

Sectional area, 120.1 square inches.

Several small knots along the side. Maximum diameter, $\frac{1}{2}$ inch.

*Side on which
knots are found*



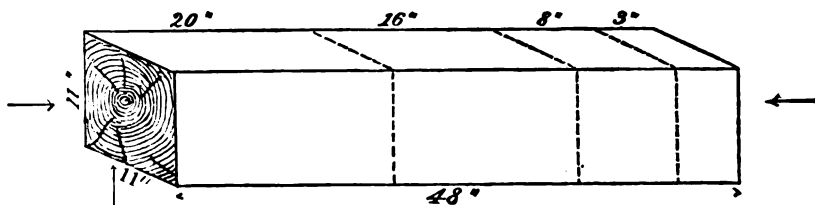
Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inches.</i>	
10,000				
50,000		.025		Gaugings taken the same as with 578.
10,000			.001	
100,000		.047		

581.—*Yellow pine*—Continued.

Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inches.</i>	
10,000		.081	.001	
200,000				
10,000		.136	.002	
300,000				
10,000		.181	.004	
400,000				
10,000		.204	.006	
450,000				
10,000		.228	.008	
500,000				
10,000		.252	.009	
550,000				Cracking sound heard at 520,000 pounds.
10,000		.279	.011	
600,000				
10,000		.305	.013	
650,000				
10,000		.337	.017	
700,000				
10,000		.377	.023	Signs of failure near knots.
750,000				
10,000			.037	
786,900	6,552			Ultimate strength.

Column failed at knot 42 inches from the end. Fibers of the wood buckled in oblique lines, similar to 578.

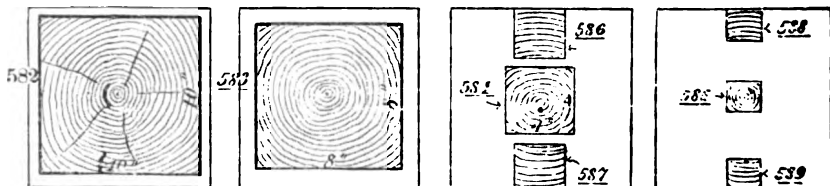
YELLOW PINE.



Specimens cut out of this post to determine the relative strength of large and small specimens of the same wood.

Nos. 582 to 585, inclusive, have the heart of the wood in the center of the specimens.

Nos. 586 to 589, inclusive, are taken from the side of the post.



582.

Size of specimen, 10.04 × 10.04 × 20 inches long.

Sectional area, 100.8 square inches.

Straight-grained wood.

Sustained 800,000 pounds = 7,936 pounds per square inch, opening longitudinal crack slightly.

Same block dressed down to 9 × 9 inches.

Reduced sectional area, 81 square inches.

Ultimate strength, 674,100 pounds = 8,322 pounds per square inch.

Block failed by fibers buckling in oblique lines across faces of the wood.

583.

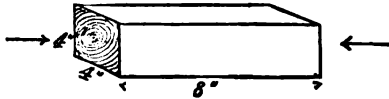
Size, $8.02 \times 8.02 \times 16$ inches.

Sectional area, 64.3 square inches.

Ultimate strength, 525,000 pounds = 8,165 pounds per square inch.

Fibers buckled, failure beginning at small knot on side of block.

584.



Sectional area, 16 square inches.

Ultimate strength, 118,300 pounds = 7,394 pounds per square inch.

Specimen was straight-grained; fibers buckled.

585.



Sectional area, 2.25 square inches.

Ultimate strength, 12,450 pounds = 5,533 pounds per square inch.

Failed at knots.

586.

Dimensions, $3 \times 3 \times 6$ inches long.

Sectional area, 9 square inches.

Ultimate strength, 77,800 pounds = 8,644 pounds per square inch.

Fiber of wood buckled in oblique lines.

587.

Dimensions, $3 \times 3 \times 6$ inches long.

Sectional area, 9 square inches.

Ultimate strength, 73,200 pounds = 8,133 pounds per square inch.

Failed by season-cracks on side opening, and fibers buckling and bulging.

588.

Size, $1\frac{1}{2} \times 1\frac{1}{2} \times 3$ inches long.

Sectional area, 2.25 square inches.

Ultimate strength, 18,740 pounds = 8,389 pounds per square inch.

Fibers buckled.

589.

Size, $1\frac{1}{2} \times 1\frac{1}{2} \times 3$ inches long.

Sectional area, 2.25 square inches.

Ultimate strength, 18,680 pounds = 8,302 pounds per square inch.

Season-cracks opened; fibers began to buckle.

590.



Sectional area, 2.25 square inches.

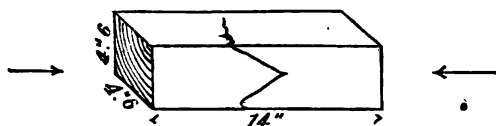
Season-crack nearly separates specimen.

Specimen cut from end of No. 583.

Ultimate strength, 14,300 pounds = 6,355 pounds per square inch.

Opened season-cracks wider; one half failed by bending and buckling; the other half by buckling of fibers alone.

591.



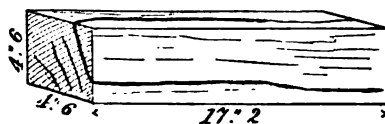
Yellow pine, of slow growth; 23 rings per inch.

Sectional area, 21.16 square inches.

Ultimate strength, 210,600 pounds = 9,947 pounds per square inch.

Fibers buckled, forming wedge-shaped ends.

592.



Yellow pine, of slow growth, about the the same as 591.

Specimen taken farther from the heart than 591.

Large season-crack; general appearance not so good as 591.

Sectional area, 21.16 square inches.

Ultimate strength, 217,000 pounds = 10,250 pounds per square inch.

Fibers buckled; season-crack apparently not weakening the block.

593.



Sectional area, 28.09 square inches.

Ultimate strength, 219,600 pounds = 7,820 pounds per square inch.

Post failed by opening longitudinal cracks.

Fibers did not buckle; load continued till pieces of wood next the heart cracked off.

COMPRESSION OF WHITE PINE, PERPENDICULAR TO THE GRAIN.

985.

Specimen, 4.45 inches diameter \times 2 inches thick.

Grain of wood parallel to diameter.

Sectional area, 15.6 square inches.

Loads applied.	Pounds per square inch.	Length of specimen.	Total compression.	Diameter.	Compression.
<i>Pounds.</i>		"	"	"	
7,800	500	1.88			
15,600	1,000	1.08	.80		
31,200	2,000	.77	1.11		
78,000	5,000	.57	1.31	5.23	} Maximum. Wood splits.
156,000	10,000	.51	1.37	5.45	
312,000	20,000	.47	1.41	5.55 \times 4.65	
468,000	30,000	.31	1.57	7.7 \times 4.96	
624,000	40,000	.28	1.60		
702,000	45,000	.27	1.61		

Shape of wood after test, elliptical.

Diameters, 4.45 inches and 8.4 inches by about .55 inches thick.

It is probable that the diameters during the test are somewhat different than here recorded. The narrow space in which they were measured may have prevented the minimum diameter from being accurately determined.

COMPRESSION TEST OF BUILT COLUMN OF YELLOW PINE.

691.

Oak Packing 1" \times 4"

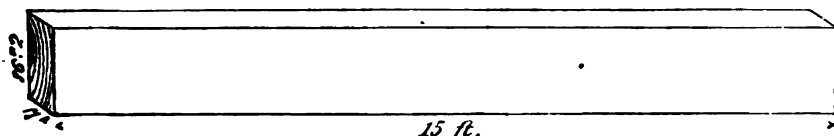
Sectional area (both sticks), 218.4 square inches.

Wood in very wet condition.

Ultimate strength, 670,000 pounds = 3,070 pounds per square inch.

Column failed at knot near the middle of one stick, knot $3\frac{1}{2}$ inches diameter; deflected sideways.

692.



Sectional area, 113.4 square inches.

Wood in very wet condition.

Initial bend sideways about $\frac{1}{4}$ inch.

Ultimate strength, 317,000 pounds = 2,795 pounds per square inch.
 Deflected sideways following the direction of the initial bend. Test discontinued before post was permanently injured.
 Post set aside to be again tested after drying.

COMPRESSION OF WOOD.

Strains applied parallel to fibers.

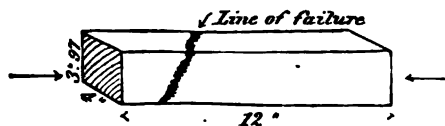
700.—WHITE MAPLE.



Sectional area, 15.9 square inches.

Ultimate strength, 113,600 pounds = 7,140 pounds per square inch.
 Failed by fibers buckling or crumbling, beginning at a knot.

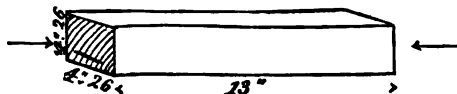
701.—WHITE MAPLE.



Sectional area, 15.9 square inches.

Ultimate strength, 114,600 pounds = 7,210 pounds per square inch.
 Fibers buckled, taking an oblique direction around specimen.

702.—RED BIRCH.



Sectional area, 18.1 square inches.

Ultimate strength, 145,300 pounds = 8,030 pounds per square inch.

Fibers buckled, commencing where the grain of the wood was slightly curved.

703.—RED BIRCH.

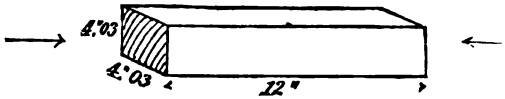
Same dimensions as 702.

Sectional area, 18.1 square inches.

Ultimate strength, 141,500 pounds = 7,820 pounds per square inch.
 Failed in the same way as 702.

The behavior of the scale indicated that the maximum load was reached before the specimen showed any signs of failure. The ultimate load was sustained three minutes before the wood began to buckle perceptibly. This test made on a machine of less sensitiveness would doubtless have given a result too high, as a load in excess of what was required to cripple the wood could have been applied and sustained a short time before the buckling was apparent.

704.—WHITEWOOD.



Sectional area, 16.2 square inches.

Ultimate strength, 71,900 pounds = 4,440 pounds per square inch.

Fibers buckled 2" from end of specimen.

705.—WHITEWOOD.

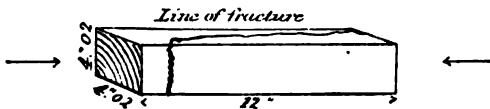
Same dimensions as 704.

Sectional area, 16.2 square inches.

Ultimate strength, 70,200 pounds = 4,330 pounds per square inch.

Fibers buckled $3\frac{1}{2}$ inches average distance from end of specimen.

706.—WHITE PINE.



Sectional area, 16.2 square inches.

Ultimate strength, 88,700 pounds = 5,475 pounds per square inch.

Fibers buckled 2 inches from end; wood split the remainder of the length of the specimen.

707.—WHITE PINE.

Same dimensions as 706.

Sectional area, 16.2 square inches.

Ultimate strength, 93,300 pounds = 5,760 pounds per square inch.

Fibers buckled near end and wood cracked the entire length of the specimen.

708.—WHITE OAK.



Sectional area, 16 square inches.

Ultimate strength, 118,000 pounds = 7,375 pounds per square inch.

Specimen failed by flexure as a column, the fibers in part buckling. Fibers oblique to axis of specimen.

709.—WHITE OAK.

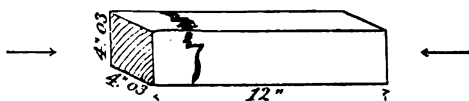
Same dimensions as 708.

Sectional area, 16 square inches.

Ultimate strength, 112,200 = 7,010 pounds per square inch.

Fibers ran obliquely to the axis of specimen, failure taking place by opening crack along fibers and buckling fibers.

710.—ASH.



Sectional area, 16.2 square inches.

Ultimate strength, 128,600 pounds = 7,940 pounds per square inch.

Fibers buckled near one end; specimen shortened $\frac{1}{4}$ inch without opening cracks.

711.—ASH.

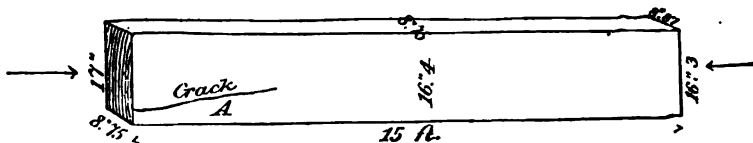


Sectional area, 16.3 square inches.

Ultimate strength, 124,500 pounds = 7,640 pounds per square inch.

Opened season-crack; fibers buckled.

COMPRESSION OF YELLOW PINE.



Sectional area (at middle), 143.5 square inches.

Timber in a wet condition.

Ultimate strength, 456,000 pounds = 3,180 pounds per square inch.

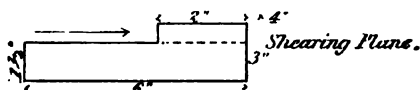
Under the ultimate load deflection began suddenly, bending sideways, opened at crack at A. Pressure immediately relieved and timber removed from the testing machine.

STRENGTH OF WOOD.

Shearing with the grain.

595.—WHITE PINE.

(Form of specimens.)

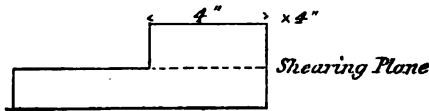


Shearing area, 2×4 inches = 8 square inches.

Shearing strength, 1,900 pounds = 225 pounds per square inch.

Steel plates behind pine block rose, causing friction between plunger and wood, which gives too high shearing resistance.

596.



Shearing area, 4×4 inches = 16 square inches.

Shearing strength, 6,090 pounds = 381 pounds per square inch.

Same remarks as to friction as made for 595.

597.

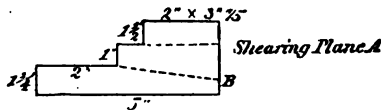
Specimen 595. Shearing plane perpendicular to rings.

Area, $2 \times 1\frac{1}{2}$ inches = 3 square inches.

Ultimate shearing, 1,270 pounds = 423 pounds per square inch.

Same remarks as to friction as made for 595.

598.—WHITEWOOD.

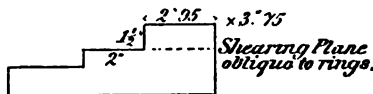


Shearing area, 7.5 square inches.

Shearing plane oblique to rings.

Fractured through line B, not shearing along the plane A, under load of 2,810 pounds. Therefore shearing strength exceeds 375 pounds per square inch.

599.



Shearing area, 11 square inches.

Ultimate strength, 1,400 pounds = 127 pounds per square inch.

Plunger did not come to good bearing on wood, starting the fracture on one side.

600.

Shearing area, 1.95×3.75 inches = 7.3 square inches.

Ultimate strength, 2,700 pounds = 370 pounds per square inch.

Shearing plane oblique to rings.

601.

Shearing area, 4.05×5.4 inches wide = 21.87 square inches.

Ultimate strength, 10,530 pounds = 481 pounds per square inch.

Shearing plane parallel with grain of rings.

602.

Off same piece of wood as 601.

Shearing in the same manner.

Area, 6×5.4 inches wide = 32.4 square inches.

Ultimate strength, 13,050 pounds = 464 pounds per square inch.

603.

Area, 6×5.38 inches wide = 32.3 square inches.

Ultimate strength, 12,450 pounds = 385 pounds per square inch.

Shearing plane perpendicular to grain of rings.

Specimen not sound on side (dry rot).

604.

Area, 4.02×5.38 inches wide = 21.6 square inches.

Ultimate strength, 6,950 pounds = 322 pounds per square inch.

Shearing plane with same direction as 603.

Defective spots (dead wood) on side of specimen.

605.

Area, 5.48×2.05 inches = 11.23 square inches.

Ultimate strength, 2,390 pounds = 213 pounds per square inch.

Shearing plane with same direction as 603.

Specimen injured by dry rot.

606.

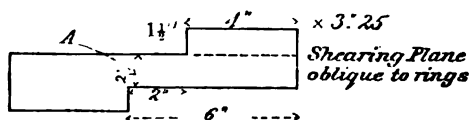
Area, 5.40×2 inches long = 10.8 square inches.

Ultimate strength, 3,540 pounds = 328 pounds per square inch.

Shearing plane in same direction as 601.

607.—YELLOW PINE.

Shearing with the grain.



Area, 13 square inches.

Ultimate strength, 5,190 pounds = 399 pounds per square inch.

End of specimen rose against plunger during the test, causing friction \pm to be deducted from the strength of the wood.

608.

Shearing same as 607. Thickness A reduced to $\frac{1}{2}$ inches, and distance between shoulders 4 inches.

Area, 4.05×3.24 inches = 13.1 square inches.

Ultimate strength, 4,150 pounds = 317 pounds per square inch.

609.—WHITEWOOD.

Shearing with the grain.

Form of specimen shown by sketch 599.

Shearing plane oblique to direction of yearly rings.

Area, 5.4 inches wide \times 4 inches long = 21.6 square inches.

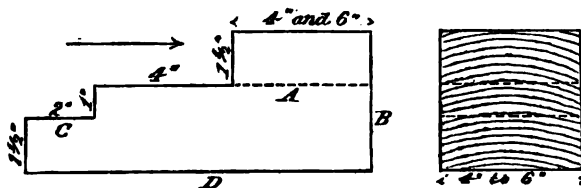
Ultimate strength, 8,770 pounds = 406 pounds per square inch.

610.—Same as 609.

Area, 5.4 inches long \times 4 inches wide = 21.6 square inches.

Ultimate strength, 8,260 pounds = 382 pounds per square inch.

FORM OF TEST-PIECES.



Shearing plane along line A.

Specimens rest in holder on face D, with end B pressing against cast-iron block, reaching to a less height than plane A. Opposite end held firmly by a cross-bar pressing down on face C. A plunger acts on the section of the block above line A, in the direction of the arrow, causing single shear of the wood.

614.—YELLOW PINE.

Shearing plane perpendicular to rings.

Area, 4 inches long \times 4 1/4 inches wide = 17 square inches.

Ultimate strength, 6,950 pounds = 409 pounds per square inch.

615.—YELLOW PINE.

Shearing plane oblique to rings.

Area, 6 \times 4.22 inches = 25.32 square inches.

Ultimate strength, 10,520 pounds = 415 pounds per square inch.

616.—YELLOW PINE.

Shearing same as 615.

Area, 4 \times 4.22 inches = 16.88 square inches.

Ultimate strength, 6,900 pounds = 409 pounds per square inch.

617.—YELLOW PINE.

Shearing same as 615.

Area, 6 \times 4.26 inches = 25.56 square inches.

Ultimate strength, 9,300 pounds = 364 pounds per square inch.

618.—YELLOW PINE.

Wood much heavier and with more pitch than preceding specimens.
Not straight grained.



Shearing perpendicular to rings.

Area, $6'' \times 4''.23 = 25.38$ square inches.

Ultimate strength, 7,250 pounds = 286 pounds per square inch.

Sheared through sound wood below the knot.

619.—YELLOW PINE.

Same kind as 618.

Not straight grained.



Shearing oblique to rings.

Area, $6'' \times 4''.24 = 25.44$ square inches.

Ultimate strength, 8,400 pounds = 330 pounds per square inch.

620.—ASH.

Shearing parallel with rings.

Area, $4''.03 \times 4''.05 = 16.3$ square inches.

Ultimate strength, 9,780 pounds = 600 pounds per square inch.

Shearing plane followed rings.

621.—ASH.

Shearing same as 620.

Area, $6'' \times 4''.04 = 24.24$ square inches.

Ultimate strength, 14,350 pounds = 592 pounds per square inch.

622.—ASH.

Shearing perpendicular to rings.

Season crack, $1\frac{1}{2}$ inches deep, .55 inch below shearing plane.

Area, $4'' \times 4''.04 = 16.16$ square inches.

Ultimate strength, 7,400 pounds = 458 pounds per square inch.

Sheared through sound wood.

623.—ASH.

Shearing same as 622.

Season crack, 1.37 inches deep, $\frac{1}{8}$ inch below shearing plane, extending length of specimen.

Size of block, $5''.97 \times 4''.03 = 24$ square inches.

Ultimate strength, 11,120 pounds = 700 pounds per square inch on 15.88 square inches.

Actual shearing surface, $5''.97 \times (4''.03 - 1''.37) = 15.88$ square inches.

624.—RED OAK.

Shearing perpendicular to rings.

Area, $4'' \times 4'' = 16$ square inches.

Ultimate strength, 12,400 pounds = 775 pounds per square inch.

625.—RED OAK.

Shearing same as 624.

Area, $5''.98 \times 4'' = 23.92$ square inches.

Ultimate strength, 17,780 pounds = 743 pounds per square inch.

626.—RED OAK.

Shearing parallel with rings.

Area, $4'' \times 4'' = 16$ square inches.

Ultimate strength, 15,980 pounds = 999 pounds per square inch.

627.—RED OAK.

Shearing parallel with rings.

Area, $5''.96 \times 4''.02 = 23.96$ square inches.

Ultimate strength, 17,400 pounds = 726 pounds per square inch.

Irregular shearing surface. Wood opened at a knot which did not appear before the test.

Direction of the knot as regards shearing pressure \longrightarrow 

628.—WHITE OAK.

Shearing parallel to rings.

Area, $4'' \times 4''.03 = 16.12$ square inches.

Ultimate strength, 15,580 pounds = 966 pounds per square inch.

629.—WHITE OAK.

Shearing plane same as 628.

Area, $6'' \times 4'' = 24$ square inches.

Ultimate strength, 19,280 pounds = 803 pounds per square inch.

630.—WHITE OAK.

Shearing plane perpendicular to rings.

Area, $3''.96 \times 4'' = 15.84$ square inches.

Ultimate strength, 13,420 pounds = 846 pounds per square inch.

631.—WHITE OAK.

Shearing plane same as 630.

Area, $6'' \times 4'' = 24$ square inches.

Ultimate strength, 18,050 pounds = 752 pounds per square inch.

632.—YELLOW BIRCH.

Shearing plane oblique to rings.

Area, $4'' \times 4''.26 = 17.04$ square inches.

Ultimate strength, 9,590 pounds = 563 pounds per square inch.

H. Ex. 12—5

633.—YELLOW BIRCH.

Shearing plane same as 632.

Area, $4'' \times 4'' .26 = 17.04$ square inches.

Ultimate strength, 13,890 pounds = 815 pounds per square inch.

Plunger did not come to a good bearing on the wood. Bore most on one side.

634.—YELLOW BIRCH.

Shearing plane perpendicular to rings.

Area, $6'' \times 4'' .26 = 25.56$ square inches.

Ultimate strength, 17,180 pounds = 672 pounds per square inch.

635.—YELLOW BIRCH.

Shearing plane same as 634.

Area, $6'' \times 4'' .26 = 25.56$ square inches.

Ultimate strength, 15,650 pounds = 612 pounds per square inch.

Small knot of .35 inch diameter in side of block.

636.—WHITE MAPLE.

Shearing plane oblique to rings.

Area, $4'' \times 4'' = 16$ square inches.

Ultimate strength, 10,350 pounds = 647 pounds per square inch.

637.—WHITE MAPLE.

Shearing plane perpendicular to rings.

Area, $4'' \times 3'' .98 = 15.92$ square inches.

Ultimate strength, 8,550 pounds = 537 pounds per square inch.

638.—WHITE MAPLE.

Shearing plane same as 636.

Area, $6'' \times 4'' = 24$ square inches.

Ultimate strength, about 8,800 pounds = 367 pounds per square inch.

Grain of wood not straight. No knots.

639.—WHITE MAPLE.

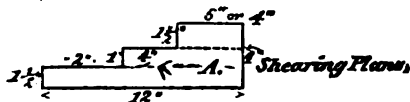
Shearing plane same as 636.

Area, $6'' \times 3'' .98 = 23.88$ square inches.

Ultimate strength, 10,300 pounds = 431 pounds per square inch.

Shearing with grain.

(Form of specimens.)



748.—SPRUCE.

Shearing parallel to rings.

Shearing area, 4'' long \times 3'' .95 wide = 15.8 square inches.

Ultimate strength, about 4,000 pounds = 253 pounds per square inch.
 Opened crack along second step of the specimen at A. Unsatisfactory test.

749.—SPRUCE.

Shearing perpendicular to rings.

Shearing area, $4'' \times 4'' = 16$ square inches.

Ultimate strength, 5,980 pounds = 374 pounds per square inch.

750.—SPRUCE.

Shearing plane parallel to rings.

Shearing area, $6'' \times 3''.96 = 23.76$ square inches.

Ultimate strength, 8,260 pounds = 347 pounds per square inch.

751.—SPRUCE.

Shearing plane perpendicular to rings.

Shearing area, $6'' \times 4'' = 24$ square inches.

Ultimate strength, 7,590 pounds = 316 pounds per square inch.

752.—WHITE PINE.

Shearing plane parallel to rings.

Shearing area, $4'' \times 4'' = 16$ square inches.

Ultimate strength, 5,190 pounds = 324 pounds per square inch.

753.—WHITE PINE.

Shearing plane perpendicular to rings.

Shearing area, $4'' \times 4''.02 = 16.08$ square inches.

Ultimate strength, 4,300 pounds = 267 pounds per square inch.

754.—WHITE PINE.

Shearing plane parallel to rings.

Shearing area, $6'' \times 4'' = 24$ square inches.

Ultimate strength, 8,450 pounds = 352 pounds per square inch.

755.—WHITE PINE.

Shearing plane perpendicular to rings.

Shearing area, $5''.97 \times 4'' = 23.88$ square inches.

Ultimate strength, 8,740 pounds = 366 pounds per square inch.

SHEARING STRENGTH OF TIMBER. TESTS TO DETERMINE THE RESISTANCE OF TIMBER TO SHEARING OR TEARING OUT BEHIND BOLT OR MORTISE HOLES.

1023.—SPRUCE.

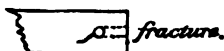
Not planed.



From center of holes to end of specimen, 2''.

Shearing area, $2'' \times 2'' \times 2'' = 8$ square inches.

Ultimate strength, 3,190 pounds = 399 pounds per square inch.
Sheared out behind bolt without splitting stick.

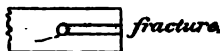


1024.—SPRUCE.

2" x 6". Inch holes 4 inches from end.
Shearing area, 2" x 4" x 2" = 16 square inches.
Ultimate strength, 5,740 pounds = 359 pounds per square inch.
Stick split and fibers crushed.

1024½.—SPRUCE.

2" x 6". Inch holes 6 inches from end.
Shearing area, 2" x 6" x 2" = 24 square inches.
Ultimate strength, 6,590 pounds = 275 pounds per square inch.
Sheared out behind, and split in front of hole.



1025.—SPRUCE.

2" x 6". Inch holes, 8 inches from end.
Shearing area, 2" x 8" x 2" = 32 square inches.
Ultimate strength, 6,460 pounds = 202 pounds per square inch.
Crushed fibers behind hole and split stick.

1026.—WHITE PINE.

2" x 6". Inch holes 2 inches from end.
Shearing area, 2" x 2" x 2" = 8 square inches.
Ultimate strength, 3,660 pounds = 457 pounds per square inch.
Wood behind hole sheared out and crack opened as in 1024½.

1027.—WHITE PINE.

2" x 6". Inch holes 4 inches from end.
Shearing area, 2" x 4" x 2" = 16 square inches.
Ultimate strength, 9,770 pounds = 611 pounds per square inch.
Fracture same as 1024½.

1028.—WHITE PINE.

2" x 6". Inch holes 6 inches from end.
Shearing area, 2" x 6" x 2" = 24 square inches.
Ultimate strength, 10,790 pounds = 450 pounds per square inch.
Fracture same as 1024½.

1029.—WHITE PINE.

2" x 6". Inch holes 8 inches from end.
Shearing area, 2" x 8" x 2" = 32 square inches.
Ultimate strength, 10,450 pounds = 327 pounds per square inch.
Fracture same as 1024½.

1030.—YELLOW PINE.

2" × 6". Inch holes 2 inches from end.

Shearing area, 2" × 2" × 2" = 8 square inches.

Ultimate strength, 4,860 pounds = 607 pounds per square inch.

Fractured by shearing out behind hole.

At 3,800 pounds crack opened behind hole, caused by the wedging action of the bolt in the inch hole.

1031.—YELLOW PINE.

2" × 6". Inch holes 4 inches from end.

Shearing area, 2" × 4" × 2" = 16 square inches.

Ultimate strength, 11,520 pounds = 720 pounds per square inch.

Fractured same as 1024½.

1032.—YELLOW PINE.

2" × 6". Inch holes 6 inches from end.

Shearing area, 2" × 6" × 2" = 24 square inches.

Ultimate strength, 10,950 pounds = 456 pounds per square inch.

Fractured same as 1024½.

1033.—YELLOW PINE.

2" × 6". Inch holes 8 inches from end.

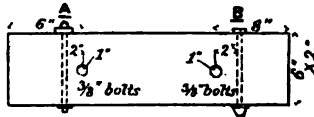
Shearing area, 2" × 8" × 2" = 32 square inches.

Ultimate strength, 10,790 pounds = 337 pounds per square inch.

Fractured similar to 1024½.

Hole elongated before stick split, .9 inch at one end and .25 inch at the other.

1034.—WHITE PINE.



Shearing area of end B, 2" × 8" × 2" = 32 square inches.

Ultimate strength, 10,700 pounds = 334 pounds per square inch.

Fractured at end B. Behind the inch bolt the fibers of the wood were crushed under the compression load. The bolt tore its way through the timber after reaching the ¾-inch bolt, without meeting with increased resistance.

Test continued till the ¾-inch nut was forced off, tearing by tension the bolt at the end of the thread.

At end A the inch hole was elongated .05 inch.

1035.—SPRUCE.

The same description and dimensions as 1034.

Under strain of 6,690 pounds the fibers of the wood were crushed behind the inch bolts, the bolts tearing through the wood without encountering any greater resistance till reaching the ¾ inch bolts. After these began to carry a part of the load, the resistance increased gradu-

ally to the maximum of 9,950 pounds, when one of the $\frac{3}{8}$ -inch bolts broke at the end of the thread. At this time the inch holes had elongated 2.85 inch eaches.

1036.—YELLOW PINE.

Same description and dimensions as 1034.

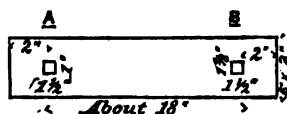
10,250 pounds sustained before fibers of wood crushed.

Maximum load reached, 13,500 pounds.

Inch bolts tore through the wood till they came in contact with the $\frac{3}{8}$ -inch bolts.

The maximum strain was reached just before the fracture of one $\frac{3}{8}$ -inch bolt at its middle, where it bent over the inch bolt.

1037.—YELLOW PINE.



To determine the force required to shear out the wood behind the rectangular holes 2 inches from ends. Wrought-iron keys used through the holes.

Shearing area, $2'' \times 2'' \times 2 = 8$ square inches.

Ultimate strength, 4,790 pounds = 599 pounds per square inch.

Sheared out behind hole at end B; $\frac{3}{8}$ -inch bolt put through stick immediately behind hole B and nut securely tightened, the piece of wood sheared out having been replaced. Hence $\frac{3}{8}$ -inch bolt carried the entire load.

Ultimate strength of end A, 5,200 pounds = 650 pounds per square inch.

$\frac{3}{8}$ -inch bolt at end B slightly bent.

1038.—YELLOW PINE.

Same as 1037, except that the distance from the holes to ends of specimen was 4 inches.

Shearing area, $2'' \times 4'' \times 2'' = 16$ square inches.

Ultimate strength, 5,900 pounds = 369 pounds per square inch.

Sheared out behind hole A.

Stick split similarly to 1024 $\frac{1}{2}$. Fractured end provided with $\frac{3}{8}$ -inch bolt, as in last experiment.

End B. Ultimate strength, 7,910 pounds = 494 pounds per square inch.

Sheared out behind hole.

1039.—YELLOW PINE.

Same as 1037, except the distance from holes to ends of specimen was 6 inches.

Shearing area, $2'' \times 6'' \times 2'' = 24$ square inches.

Ultimate strength, 12,300 pounds = 572 pounds per square inch.

Sheared out at hole B.

Fractured end provided with $\frac{3}{8}$ -inch bolt.

Under strain of 9,600 pounds $\frac{3}{8}$ -inch bolt tore apart at middle.

1040.—YELLOW PINE.

Same as 1037, except that distance from holes to ends of specimen was 7 inches.

Shearing area, $2'' \times 7'' \times 2'' = 28$ square inches.

Ultimate strength, 12,250 pounds = 438 pounds per square inch.

Sheared out behind hole at end B. Fibers of wood slightly crushed, and stick cracked.

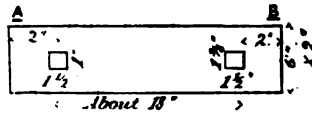
End B provided with $1\frac{1}{2}$ -inch bolt behind hole.

Ultimate strength, end A, 12,650 pounds = 452 pounds per square inch.

Sheared out wood behind the hole.

Stick cracked similarly to 1024 $\frac{1}{2}$.

1041.—WHITE PINE.



Shearing area, $2'' \times 2'' \times 2'' = 8$ square inches.

Ultimate strength, 4,400 pounds = 550 pounds per square inch.

Sheared out behind $1\frac{1}{2}$ -inch hole (end B). Stick not cracked otherwise.

$\frac{3}{4}$ -inch bolt put through wood behind end B.

Ultimate strength, end A, 4,000 pounds = 500 pounds per square inch.

End A was evidently overstrained and fracture started during first test.

1042.—WHITE PINE.

Same as 1041, except that distance from holes to ends of specimens was 4 inches.

Shearing area, $2'' \times 4'' \times 2'' = 16$ square inches.

Ultimate strength, 6,600 pounds = 412 pounds per square inch.

Sheared out at end B.

$\frac{3}{4}$ -inch bolt put through end B and again tested. $\frac{3}{4}$ -inch bolt broke at end of thread under 7,480 pounds. Hole A apparently uninjured.

1043.—WHITE PINE.

Same as 1041, except that distance from holes to ends of specimen was 6 inches.

Shearing area, $2'' \times 6'' \times 2'' = 24$ square inches.

Ultimate strength, 7,980 pounds = 332 pounds per square inch.

Sheared at end A. Wood not cracked except behind the hole. $\frac{3}{4}$ -inch bolt put through end A and new test made.

Ultimate strength, end B, 10,400 pounds = 433 pounds per square inch.

Sheared wood behind hole.

1044.—WHITE PINE.

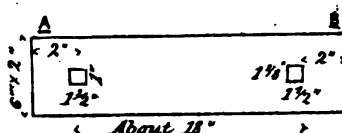
Same as 1041, except that distance from holes to ends of specimen was 7 inches.

Season crack through end A.

Shearing area, $2'' \times 7'' \times 2'' = 28$ square inches.

Ultimate strength, end *A*, 6,600 pounds = 236 pounds per square inch.
 Sheared behind hole, but fracture did not follow open season cracks.
 Ultimate strength, end *B*, 8,400 pounds = 300 pounds per square inch.
 Sheared wood behind hole.

1045.—SPRUCE.



Shearing area, $2'' \times 2'' \times 2'' = 8$ square inches.

Ultimate strength, 3,280 pounds = 410 pounds per square inch.

Sheared at end *A*.

$\frac{3}{4}$ -inch bolts put behind hole *A*.

Ultimate strength, end *B*, 3,290 pounds = 411 pounds per square inch.

Sheared behind hole.

Specimen not thoroughly seasoned.

1046.—SPRUCE.

4 inches from holes to end of specimen.

Shearing area, $2'' \times 4'' \times 2'' = 16$ square inches.

Ultimate strength, 5,420 pounds = 329 pounds per square inch.

Sheared at end *A*. Crack opened similar to 1024 $\frac{1}{2}$.

Fibers of wood crushed under compression.

Wood not thoroughly seasoned.

Hole *A* elongated $\frac{3}{4}$ inch before wood sheared.

1047.—SPRUCE.

6 inches from holes to ends of specimen.

Shearing area, $2'' \times 6'' \times 2'' = 24$ square inches.

Ultimate strength, 5,800 pounds = 242 pounds per square inch.

Sheared at end *A*. Specimen cracked. Fibers of wood crushed.
 Timber wet.

1048.—SPRUCE.

7 inches from holes to end of specimen.

Shearing area, $2'' \times 7'' \times 2'' = 28$ square inches.

Ultimate strength, 7,800 pounds = 279 pounds per square inch.

Failed at end *A* by crushing and shearing of wood.

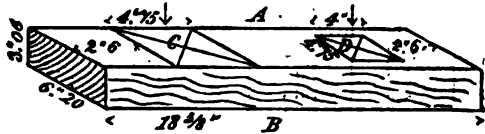
Elongation of hole, $\frac{7}{8}$ inches.

NOTE.—Specimens 1046–1048 were unseasoned. Failures were doubtless caused by the fibers crushing, elongating the holes, and so causing shearing to take place. In each experiment failure occurred at end *A*, the end which carried the highest compression strain in pounds per square inch.

STRENGTH OF WOODS.

WHITE PINE.

CRUSHING STRENGTH AT RIGHT ANGLES TO FIBER.

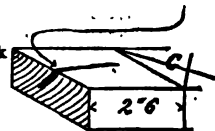
*Clear stock, thoroughly seasoned.*Face *B* pressed against flat compression platform.Face *A* loaded on the sections shown by the figured rectangles

Cast-iron block used to press against the wood.

519.

Pressure acting on area $C = 6'' \times 4'' \cdot 75 = 2,945$ square inches.

Loads applied.	Pounds per square inch.	Compression.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
294	10	Block of wood planed in Daniel's planer.
589	20	0.	.....
1,178	40	.01	.....
1,767	60	.01	.....
2,356	80	.01+	.....
2,945	100	.02	.....
4,417	150	.02+	.....
5,890	200	.03	.....
7,362	250	.035	.....
8,835	300	.04	.....
10,307	350	.04+	.....
11,780	400	.045	.....
13,252	450	.....	0.
14,725	500	.....	0.
16,197	550	.....	.00+
17,670	600	.....	.....
19,142	650	0.	Surface examined; slight indentation and smoothing of surface left rough by the planer.
20,615	700	.....	0.
22,087	750	.08	.01	
23,560	800	.....	.02
25,032	85004+	Continued yielding of wood. Load causing indentation of $\frac{1}{16}$ inch = about 875 pounds per square inch. Sustained load about one minute; then block cracked.
26,505	900	.....	.055
27,977	950	Open'd crack wider.
29,450	1,000	.....	.10

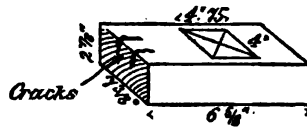


520.

Pressure acting on area D , $4''.75 \times 4'' = 19$ square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
190	10	0.	
1,900	100	0.	
3,800	200	.005	
5,700	300	.01	
7,600	400	.01+	
9,500	500	.015	
11,400	600	.02	
12,350	650	.02	
13,800	700	.02+	
14,250	750	.025	
15,200	800	.025	
16,150	850	.03	
17,100	900	.04	
18,050	950	.06	Continued yielding of wood; load causing indentation of $\frac{1}{8}$ inch = about 925 pounds per square inch.
19,000	1,000	.08	Crack opened from compressed section to end of block.
19,850	1,050	.105	
20,900	1,100	.13	

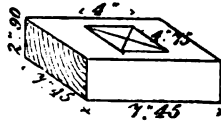
521.



Compressed area, 19 square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
190	10	0.	
1,900	100	0.	
7,600	400	.01	
13,800	700	.02	
15,200	800	.02+	
16,150	850	.025	
17,100	900	.025+	
18,050	950	.03	
19,000	1,000	.05	Cracks started; $\frac{1}{8}$ inch indentation.
19,850	1,055	.06	Cracks opened wider.
20,900	1,100	.07	Do.

522.



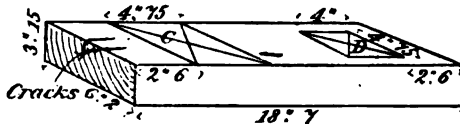
Compressed area, 19 square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
190	10	-----	
1,900	100	0.	
7,600	400	.005	
13,800	700	.015	
25,200	800	.025	
16,150	850	.025+	
17,100	900	.025+	
18,050	950	.035	
19,000	1,000	.04	Continued yielding of the wood. Cracks started; load causing indentation of $\frac{1}{4}$ inch = about 1,025 pounds per square inch. Cracks opened wider.
19,950	1,050	.06	
20,900	1,100	.08	

WHITEWOOD.

CRUSHING STRENGTH AT RIGHT ANGLES TO FIBERS.

523.



[Experiments 523 to 526, inclusive, all made with the same plank.]

Compressed area, C, $4''.75 \times 6''.2 = 29.45$ square inches.

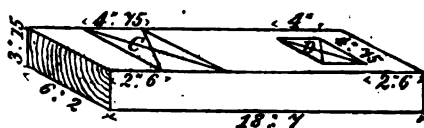
Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
294	10	-----	
2,945	100	0.	
5,890	200	0.	
8,835	300	0.	
11,780	400	.01	
14,725	500	.01	
17,670	600	.015	
20,615	700	.02	
23,560	800	.02+	
26,505	900	.05	$\frac{1}{4}$ inch indentation. Sheared fibers, but opened no cracks. Opened cracks and yielding continued.
29,450	1,000	.11	
32,395	1,100	.18	

524.

Compressed area, D , $4''.75 \times 4'' = 19$ square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
190	10	0.	
1,900	100	0.	
7,600	400	.01—	
11,400	600	.015	
13,800	700	.015	
15,200	800	.015 +	
17,100	900	.05	$\frac{1}{8}$ inch indentation.
19,000	1,000	.12	
20,900	1,100	.22	Continued yielding; sheared fibers.

525.

Compressed area, C , $4''.75 \times 6''.2 = 29.45$ square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
294	10	0.	
2,935	100	0.	
8,835	300	.005	
11,780	400	.005 +	
14,725	500	.01	
17,670	600	.01 +	
20,615	700	.02—	
23,560	800	.02 +	
26,505	900	.05	$\frac{1}{8}$ inch indentation.
29,450	1,000	.13	Continued yielding; sheared fibers and cracked slightly.

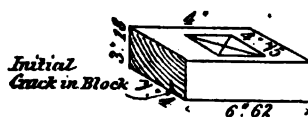
526.

Compressed area, D , $4''.75 \times 4'' = 19$ square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
190	10	0.	
1,900	100	.005	
7,600	400	.01	
11,400	600	.015	
13,800	700	.02	
15,200	800	.025	
17,100	900	.035	
18,050	950	.06	
19,000	1,000	.07	Load of about 925 pounds per square inch required to indent wood $\frac{1}{8}$ inch.
20,900	1,100	.13	
22,800	1,200	.23	Continued yielding.

Sheared fibers without opening cracks along fibers.

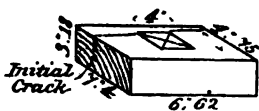
527.



Compressed area, 19 square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
190	10	0.	
1,900	100	0. +	
4,700	300	.005	
7,600	400	.01	
9,500	500	.01	
11,400	600	.015	
13,200	700	.015	
15,200	800	.02	
17,100	900	.025	
18,050	950	.03	
19,000	1,000	.04 +	
19,950	1,050	.055	Initial crack opened through to compressed area.
20,900	1,100	.07	Load about 1,025 pounds per square inch to indent wood $\frac{1}{16}$ inch.

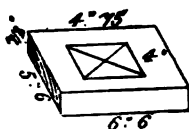
528.



Compressed area, 19 square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
190	10	0.	
1,900	100	.005	From same plank as 527.
7,600	400	.01	
11,400	600	.015	
13,200	700	.015	
15,200	800	.02	
17,100	900	.02 +	
18,050	950	.025	
19,000	1,000	.03	
19,950	1,050	.03 +	
20,900	1,100	.04	
21,850	1,150	.05	$\frac{1}{16}$ inch indentation.

535.—BLACK WALNUT.



Compressed area, 19 square inches.

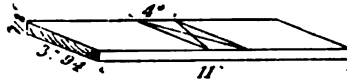
Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
190	10	0.	
1,900	100	.005	
7,600	400	.01—	
11,400	600	.01	
15,200	800	.01+	
19,000	1,000	.01+	
22,800	1,200	.01+	
26,600	1,400	.01—	
30,400	1,600	.01+	
34,200	1,800	.01+	
38,000	2,000	.02—	
41,800	2,200	.025	
45,600	2,400	.04—	
47,500	2,500	.06—	
			Load of 2,450 pounds per square inch required to indent wood $\frac{1}{8}$ inch.
49,400	2,600	.08	Sheared wood started cracks.

536.—Block of same wood as 535. Dimensions same.

Compressed area, 19 square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
190	10	0.	
1,900	100	0.	
19,000	1,000	.01	
30,400	1,600	.015	
38,000	2,000	.01	
41,800	2,200	.025+	
45,600	2,400	.04	
46,550	2,450	.05	$\frac{1}{8}$ inch indentation.
47,500	2,500	.065	
49,400	2,600	.085	Sheared wood. No cracks.

537.



Compressed area, 15.76 square inches.

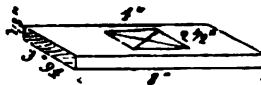
Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
157	10	0.	
1,576	100	0.	
15,760	1,000	.01	
25,218	1,600	.015+	
31,520	2,000	.03	
34,672	2,200	.05	$\frac{1}{8}$ inch indentation.
36,248	2,300	.07	
39,400	2,500	.12	Sheared wood. No cracks.

538.—Block of same size and shape as 537.

Compression area, 15.76 square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
157	10	0.	
1,576	100	0.	
15,760	1,000	.005	
25,218	1,600	.01	
31,520	2,000	.02	
34,672	2,200	.05—	$\frac{1}{8}$ inch indentation.
36,248	2,300	.07	
39,400	2,500	.125	Sheared wood. No cracks.

539.

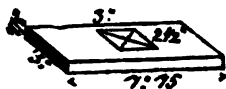


Compression area, 10 square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
100	10	0.	
1,000	100	0.	
10,000	1,000	0.	
16,000	1,600	.005	
20,000	2,000	.01	
22,000	2,200	.02	
23,000	2,300	.03	
24,000	2,400	.04	
24,500	2,450	.05	$\frac{1}{8}$ inch indentation.
25,000	2,500	.06	
26,000	2,600	.075	

TEST OF METALS.

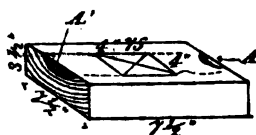
540.

*Compressed area, 7.5 square inches.*

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
75	10	0.	
750	100	0.	
7,500	1,000	.005	
12,000	1,600	.01	
15,000	2,000	.015	
16,500	2,200	.02	
17,350	2,300	.02	
18,000	2,400	.025	
18,575	2,450	.03	
18,750	2,500	.035	
19,125	2,550	.04	
19,300	2,600	.05	1/4 inch indentation.
19,575	2,650	.055	
20,250	2,700	.06	
22,000	2,800	.10	Wood sheared. No cracks.

Specimens Nos. 535 to 540, inclusive, all taken from the same plank.

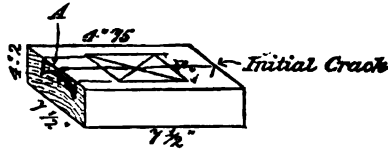
541.—ASH.

*Compressed area, 19 square inches.*

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
190	10	0.	
1,900	100	0.	
19,000	1,000	.01	
30,400	1,600	.025	
38,000	2,000	.07	
39,900	2,100	.085	
41,800	2,200	.115	
43,700	2,300	.14	

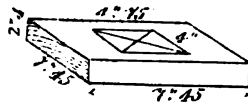
Load required for indentation of 1/4 inch, about 1,850 pounds per square inch.
Opened cracks at A and A'.

542.

*Compressed area, 19 square inches.*

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
190	10	0.	
1,900	100	0.	
19,000	1,000	.01	
22,800	1,200	.015	
26,600	1,400	.02—	
30,400	1,600	.035	
32,300	1,700	.04	
33,250	1,750	.045	
34,200	1,800	.05	$\frac{1}{8}$ inch indentation.
36,100	1,900	.07	
38,000	2,000	.10+	
41,800	2,200	.18	Opened cracks at A.

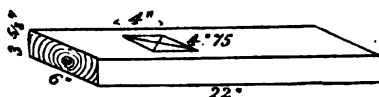
543.—WHITE OAK.

*Compressed area, 19 square inches.*

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
190	10	0.	
1,900	100	0.	
19,000	1,000	.01	
26,600	1,400	.015	
30,400	1,600	.015	
34,200	1,800	.015	
38,000	2,000	.02—	
41,800	2,200	.02	
45,600	2,400	.02+	
49,400	2,600	.025	
53,200	2,800	.03	
57,000	3,000	.035	
60,800	3,200	.04—	
64,600	3,400	.045	
66,500	3,500	.05—	Load of 3,550 pounds per square inch required to indent wood $\frac{1}{8}$ inch.
68,400	3,600	.05+	

TEST OF METALS.

544.—SPRUCE.



Compressed area, 19 square inches.

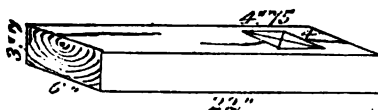
Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
100	10	0.	
1,900	100	.005	
7,600	400	.01	
9,500	500	.015	
11,400	600	.02	
13,300	700	.02	
15,200	800	.02+	
17,100	900	.04	
18,050	950	.04	
19,000	1,000	.05	1/8 inch indentation.
19,950	1,050	.08	
20,900	1,100	.08	
21,850	1,150	.10	

545.—Other face of 544 used ; not opposite the first compression.

Compressed area, 19 square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
100	10	0.	
1,900	100	0. +	
7,600	400	.01	
9,500	500	.01+	
11,400	600	.01+	
13,300	700	.015	
15,200	800	.02	
17,100	900	.025	
18,050	950	.03+	
19,000	1,000	.04	
19,950	1,050	.05+	Load of about 1,025 pounds per square inch to produce indentation of 1/8 inch.
20,900	1,100	.06+	

546.



[Season cracks along face.]

Compressed area, 19 square inches.

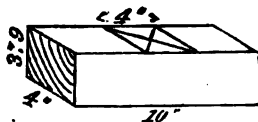
Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
190	10	0.	$\frac{1}{8}$ inch indentation at 975 pounds per square inch.
1,900	100	.005	
7,600	400	.01+	
11,400	600	.02—	
15,200	800	.03—	
17,100	900	.035	
18,050	950	.05—	
19,000	1,000	.05+	
19,950	1,050	.07—	
20,900	1,100	.08	

547.—Other face of block used in 546; opposite end.

Compressed area, 19 square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
190	10	0.	875 pounds per square inch to produce $\frac{1}{8}$ inch indentation.
1,900	100	.01—	
7,600	400	.015	
11,400	600	.025	
15,200	800	.04—	
17,100	900	.055	
18,050	950	.07	
19,000	1,000	.085	
20,900	1,100	.12	

548.—YELLOW PINE.

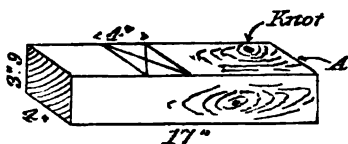
*Compressed area, 4" × 4" = 16 square inches.*

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
160	10	0.	
1,600	100	0.	
6,400	400	.005	
12,800	800	.01—	
16,000	1,000	.01	
19,200	1,200	.01+	
25,600	1,600	.02	
32,000	2,000	.16	

Sheared wood and started cracks.

Rapid yielding took place just as load reached 2,000 pounds per square inch. It is probable that the load required to indent wood $\frac{1}{16}$ inch was substantially the same as with the following experiment, 549.

549.



Compressed area, $4'' \times 4'' = 16$ square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
160	10	0.	
1,600	100	0.	
16,000	1,000	.01	
19,200	1,200	.015	
22,400	1,400	.02 +	
25,600	1,600	.025	
27,200	1,700	.03	
28,800	1,800	.04	
29,600	1,850	.045	
30,400	1,900	.05	$\frac{1}{16}$ indentation.
31,200	1,950	.055	
32,000	2,000	.065	
32,800	2,050	.08 +	
33,600	2,100	.16	Sheared wood and started cracks.

550.

Compression area, 16 square inches.

[Covers not at end of block used in 549.]

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
160	10	0.	
1,600	100	0.	
16,000	1,000	.005	
19,200	1,200	.005	
22,400	1,400	.01—	
25,600	1,600	.01—	
28,800	1,800	.01	
32,000	2,000	.01 +	
35,200	2,200	.015	
38,400	2,400	.02—	
41,600	2,600	.02—	
44,800	2,800	.02	
48,000	3,000	.02	
57,600	3,600	.03	
64,000	4,000	.04	Opened cracks at end A.
70,400	4,400	.08	Opened cracks at end A wider.

Removed from machine. Less indentation at knot side than in wood at opposite edge of compressed area.

TESTS TO COMPARE THE RESISTANCE OF BLOCKS OF VARYING THICKNESSES.

BLACK WALNUT.

551.



Compression area, 16.2 square inches.

[Thickness, $\frac{1}{2}$ inch.]

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
162	10	0.	
1,620	100	0.	
16,200	1,000	.005	
25,920	1,600	.01	
29,160	1,800	.015	
32,400	2,000	.015	
34,020	2,100	.015+	
35,640	2,200	.015+	
37,260	2,300	.02 —	
38,880	2,400	.02 —	
40,500	2,500	.02	
42,120	2,600	.025	
43,740	2,700	.035	
44,550	2,750	.04	
45,360	2,800	.05 —	
46,170	2,850	.055	
46,980	2,900	.06 +	
			$\frac{1}{8}$ inch indentation, caused by 2,810 pounds per square inch.

552.

Compression area, 16.2 square inches.

[Thickness, 1 inch.]

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
162	10	0.	
1,620	100	0.	
16,200	1,000	.005	
25,920	1,600	.01	
32,400	2,000	.015	
35,640	2,200	.02	
38,880	2,400	.02 —	
39,690	2,450	.03 +	
40,500	2,500	.04	
41,310	2,550	.05 —	
42,120	2,600	.055	
42,930	2,650	.06	
			$\frac{1}{8}$ inch indentation, caused by load of 2,560 pounds per square inch.

TEST OF METALS

553.

*Compressed area, 16.2 square inches.**[Thickness, 1½ inches.]*

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
162	10	0.	
1,620	100	0.	
16,200	1,000	.005	
25,920	1,600	.01 +	
29,160	1,800	.015 —	
32,400	2,000	.015	
35,640	2,200	.025	
37,260	2,300	.035	
38,070	2,350	.045	
38,880	2,400	.05	
40,500	2,500	.06	⅛ inch indentation.

554.

*Compressed area, 16.2 square inches.**[Thickness, 1½ inches.]*

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
162	10	0.	
1,620	100	0.	
16,200	1,000	.005 +	
25,920	1,600	.01	
29,160	1,800	.01 +	
32,400	2,000	.015	
34,020	2,100	.02 —	
35,640	2,200	.02	
37,260	2,300	.03 —	
38,070	2,350	.03	
38,880	2,400	.04 —	
39,690	2,450	.045	
40,500	2,500	.05	
41,310	2,550	.055	
42,120	2,600	.065	⅛ inch indentation.

555.

*Compressed area, 16.2 square inches.**[Thickness, 1½ inches.]*

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
162	10	0.	
1,620	100	.005	
16,200	1,000	.01	
25,920	1,600	.015	
29,160	1,800	.02 —	
32,400	2,000	.02	
34,020	2,100	.025	
35,640	2,200	.03	
37,260	2,300	.04 —	
38,070	2,350	.045	
38,880	2,400	.05	
39,690	2,450	.06	⅛ inch indentation.

556.

Compressed area, 16.2 square inches.[Thickness, $2\frac{1}{2}$ inches.]

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
182	10	0.	
1,620	100	0.	
16,200	1,000	.005	
25,920	1,600	.01 +	
29,160	1,800	.015	
32,400	2,000	.02 -	
35,640	2,200	.03	
37,260	2,300	.04 +	
38,070	2,350	.05 -	
38,880	2,400	.055	
40,500	2,500	.06 +	Load of about 2,360 pounds per square inch produces $\frac{1}{8}$ inch indentation.

SERIES OF SIX TO COMPARE THE RESISTANCE OF BLOCKS OF VARYING THICKNESSES.

WHITE PINE.

557.

*Compressed area, 16.2 square inches.*[Thickness, $\frac{3}{4}$ inch.]

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
182	10	0.	
1,620	100	.005	
8,100	500	.01 -	
9,720	600	.01	
11,340	700	.01 +	
12,960	800	.01 +	
14,580	900	.015 -	
16,200	1,000	.02 -	
17,000	1,050	.025	
17,820	1,100	.035	
18,630	1,150	.06 -	Load of about 1,120 pounds per square inch produces indentation of $\frac{1}{8}$ inch.

TEST OF METALS.

558.

Compressed area, 16.2 square inches.

[Thickness, 1 inch.]

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
162	10	0.	
1,620	100	0.	
8,100	500	.005	
9,720	600	.005 +	
11,340	700	.005 +	
12,960	800	.01	
14,580	900	.01 +	
16,200	1,000	.025	
17,010	1,050	.03	
17,820	1,100	.05	
18,630	1,150	.08 +	$\frac{1}{16}$ inch indentation.

559.

Compressed area, 16.2 square inches.[Thickness, $1\frac{1}{4}$ inches.]

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
162	10	0.	
1,620	100	0. +	
8,100	500	.005	
11,340	700	.01 -	
12,960	800	.01	
14,580	900	.01 +	
16,200	1,000	.02	
17,010	1,050	.025	
17,820	1,100	.03 -	
18,630	1,150	.04	
19,440	1,200	.06 +	Load of about 1,160 pounds per square inch produces $\frac{1}{16}$ inch indentation.

560.

Compressed area, 16.2 square inches.[Thickness, $1\frac{1}{4}$ inches.]

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
162	10	0.	
1,620	100	0.	
8,100	500	.01 -	
11,340	700	.01 +	
14,580	900	.025	
16,200	1,000	.03	
17,010	1,050	.043	
17,820	1,070	.05	
17,820	1,100	.07 -	$\frac{1}{16}$ inch indentation.

561.

Compressed area, 16.2 square inches.[Thickness, $1\frac{1}{2}$ inches.]

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
1,620	100	0.	
8,100	500	.005 +	
11,340	700	.01	
14,580	900	.02 -	
16,200	1,000	.03 -	
17,010	1,050	.045	Load of about 1,000 pounds per square inch produces indentation of $\frac{1}{8}$ inch.
17,334	1,070	.055	
17,820	1,100	.07	

562.

Compressed area, 16.2 square inches.

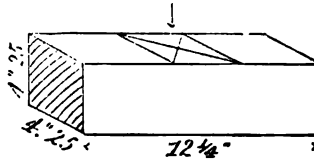
[Thickness, 2 inches.]

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
1,620	100	0. +	
8,100	500	.01	
11,340	700	.01 +	
14,500	900	.024	
16,200	1,000	.05	$\frac{1}{8}$ inch indentation.
17,010	1,050	.07	
17,820	1,100	.11	Opened cracks.
19,440	1,200	.22	
21,060	1,300	.37	
32,400	2,000		Pressure released. Block measured 1.3 inches thick.

760.

Indentation of wood, or crushing strength at right angles to fiber.

YELLOW BIRCH.



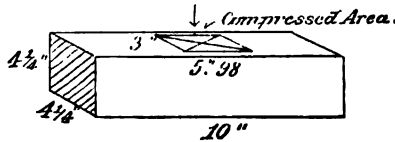
Area indented, $4'' \times 3'' = 12.75$ square inches.

Gaugings taken to determine the amount of indentation; also, the amount of compression of the block in the depth of 4.25 inches.

Loads applied.	Pounds per square inch.	Indenta- tion.	Compres- sion.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
127	10			
1,375	100	0.	0.	
2,550	200	0.	.01+	
3,825	300	0.	.01+	
5,100	400	0.	.01+	
6,375	500	0.	.01+	
7,650	600	0+	.02	
8,925	700	.005	.02	
10,200	800	.005	.02+	
11,475	900	.01	.025	
12,750	1,000	.01	.025	
14,025	1,100	.01	.03	
15,300	1,200	.01+	.03	
16,575	1,300	.015	.035	
17,850	1,400	.02—	.04	
19,125	1,500	.02—	.04	
20,400	1,600	.02	.05—	
21,675	1,700	.02+	.05	
22,950	1,800	.03—	.06	
24,225	1,900	.04	.075	
24,862	1,950	.045	.08	
25,500	2,000	.05	.08+	Indentation of $\frac{1}{16}$ inch.
26,775	2,100	.065	.105	
28,050	2,200	.08	.13	
29,325	2,300	.09	.14	
31,675	2,500	.12	.18	
35,700	2,800	.185	.26	
38,250	3,000	.22	.31	

Sheared fibers at edges of compressed section.
See note to 762.

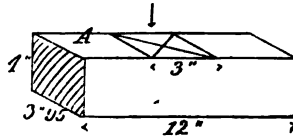
761.—YELLOW BIRCH.



Compressed area, $5''.98 \times 3'' = 17.94$ square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
Pounds.		Inch.	
179	10	0.	
1,794	100	.01—	
7,176	400	.01	
10,764	600	.015	
14,352	800	.02	
17,940	1,000	.025	
21,528	1,200	.03	
25,116	1,400	.035	
28,704	1,600	.04+	
29,601	1,650	.05	Indentation of $\frac{1}{4}$ inch.
30,498	1,700	.06	
32,292	1,800	.08—	
34,086	1,900	.085	
35,880	2,000	.11	
39,468	2,200	.16	

762.—WHITE MAPLE.



Compressed area, $3''.95 \times 3'' = 11.85$ square inches.

Loads applied.	Pounds per square inch.	Indentation.	Compression.	Remarks.
Pounds.		Inch.	Inch.	
118	10	.005	.005	
1,185	100	.01	.01	
2,370	200	.01+	.01+	
3,555	300	.01+	.015	
4,740	400	.01+	.015	
5,925	500	.01+	.02	
7,110	600	.015	.025	
8,295	700	.015	.03	
10,485	900	.02	.045	
11,850	1,000	.025	.05	
14,220	1,200	.03+	.06	
16,590	1,400	.04	.065	
17,775	1,500	.045	.07	
18,960	1,600	.05	.075	
19,552	1,650	.055	.085	
20,144	1,700	.06	.095	
21,330	1,800	.065	.115	
22,515	1,900	.07	.135	
23,700	2,000	.075	.28	
25,880	2,200	.11		
29,625	2,500			

Compression column shows total amount the wood compresses for the depth of 4 inches. The indentation column shows how much below the surface A the cast-iron plunger, acting on the compressed area, sinks.

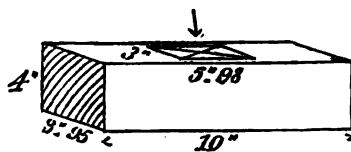
Indentation of $\frac{1}{4}$ inch.

Sheared fibers at edges of compressed area, and opened cracks along the grain.

NOTE.—An inspection of the rate of compression as compared with the rate of indentation shows that the loads applied are distributed over a large part of the block. Hence the total compression exceeds the indentation only .02 to .025 inch.

TEST OF METALS

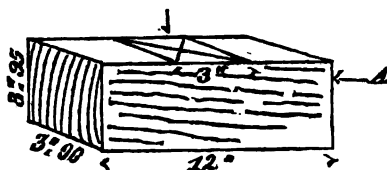
763.—WHITE MAPLE.



Compressed area, $5''.98 \times 3'' = 17.94$ square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
179	10	.....
1,784	100	.....
8,670	500	.01	
14,352	800	.01 +	
17,940	1,000	.01	
21,528	1,200	.015	
25,116	1,400	.02	
26,910	1,500	.025	
28,704	1,600	.03	
30,498	1,700	.03 +	
31,395	1,750	.035	
32,292	1,800	.04	
33,189	1,850	.05 -	
34,086	1,900	.05	Indentation of $\frac{1}{16}$ inch.
35,880	2,000	.075	Opened cracks in wood and yielded rapidly.
39,468	2,200	.....

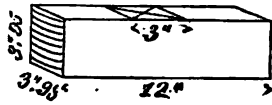
764.—WHITE OAK.



Compressed area, $3''.96 \times 3'' = 11.88$ square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	
118	10	.....
1,188	100	0.	
5,940	500	.01	
11,880	1,000	.015—	
17,820	1,500	.015	
23,760	2,000	.03	
26,136	2,200	.04	
27,324	2,300	.05	
28,512	2,400	.055	Indentation of $\frac{1}{16}$ inch.
29,700	2,500	.06	Season cracks at end A began to open, increasing in extent as the loads were greater.
30,888	2,600	.07	
32,076	2,700	.08	
33,264	2,800	.09	
35,640	3,000	.105	
38,016	3,200	.135	
41,580	3,500	.18	

765.—WHITE OAK.



Compressed area, $3''.95 \times 3' = 11.85$ square inches.

Loads applied.	Pounds per square inch.	Indentation.	Remarks.
Pounds.		Inch.	
118	10	.....
1,185	100	.00 +	
5,925	500	.005 +	
11,850	1,000	.01 —	
17,775	1,500	.01 +	
23,700	2,000	.02	
24,885	2,100	.02 +	
28,440	2,400	.03 +	
29,625	2,500	.04 —	
30,810	2,600	.04 —	
31,995	2,700	.05	Indentation of $\frac{1}{16}$ inch.
33,180	2,800	.055	
34,365	2,900	.07	
35,550	3,000	.075	
37,920	3,200	.085	
39,105	3,300	.105	
42,660	3,800	.13	

LATTICE COLUMNS AND CHANNEL BARS, FROM DETROIT BRIDGE AND IRON COMPANY.

Tabulation of experiments on wrought-iron columns.

LATTICED COLUMNS, BUILT BY THE DETROIT BRIDGE AND IRON COMPANY.

Columns with pin ends tested with pins vertical. Channel bars spaced 8 inches apart.



No. of test.	Kind.	Channel bars.	Length. Ft.	Sectional area. Sq. inches.	Ultimate strength.		Manner of failure.
					Actual. Pounds.	Per square inch. Pounds.	
1059	Flat ends	6	10 0	4.76	174,400	36,720	Channel bars buckled.
1060	do	6	10 0	4.97	166,000	33,230	Do.
1065	One flat end; one pin end	6	10 0	4.75	160,000	33,680	Do.
1066	do	6	10 0	4.58	154,800	33,800	Do.
1107	Pin ends	6	12 0	4.60	159,800	34,740	Horizontal deflection.
1108	do	6	12 0	4.57	156,100	34,160	Do.
1	do	6	12 6	4.56	163,600	35,890	Do.
2	do	6	12 6	4.74	153,500	32,380	Do.
1231	do	6	15 0	4.48	151,500	33,820	Do.
1232	do	6	15 0	4.56	157,500	34,540	Do.
1229	do	6	17 6	4.66	152,600	32,750	Do.
1230	do	6	17 6	4.74	147,500	31,120	Do.
1117	do	6	20 6	4.66	136,000	28,180	Do.
1118	do	6	20 6	4.63	143,500	30,990	Do.
1119	do	6	22 6	4.57	139,800	30,560	Do.
1120	do	6	22 6	4.66	144,700	31,050	Do.
1121	do	6	25 0	4.71	110,000	23,350	Do.
1122	do	6	25 0	4.63	117,500	25,860	Do.
20	do	6	27 6	4.69	102,500	21,850	Do.
21	do	6	27 6	4.67	97,200	20,810	Do.
18	do	6	30 0	4.70	69,300	14,740	Do.
19	do	6	30 0	4.73	75,200	15,900	Do.
1111	do	8	13 4	7.52	261,800	34,810	Deflected upward and channel bars buckled.
1112	do	8	13 4	7.50	264,300	35,240	Deflected horizontally and channel bars buckled.
1113	do	8	16 8	7.48	254,100	33,970	Do.
1114	do	8	16 8	7.48	251,400	33,610	Do.
1115	do	8	20 0	7.55	246,200	32,610	Do.
1116	do	8	20 0	7.51	241,400	32,140	Do.
1117	do	8	23 4	7.99	357,500	52,230	Deflected horizontally and vertically.
1123	do	8	23 4	7.67	340,600	51,370	Deflected horizontally.
1124	do	8	28 8	7.78	243,900	31,350	Do.
24	do	8	28 8	7.76	213,400	27,860	Do.
25	do	8	30 0	7.61	194,100	24,800	Do.

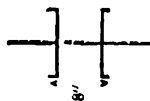
23	do	8	32	0	7.90	210,000	28,920	Do.
13	do	10	12	6	9.68	244,100	32,550	Channel bars buckled.
14	do	10	12	6	9.59	239,000	32,350	Do.
11	do	10	16	8	9.55	323,200	32,840	Do.
12	do	10	16	8	9.71	325,700	34,000	Do.
3	do	10	20	10	9.74	350,000	33,800	Do.
4	do	10	20	10	8.800	350,000	33,800	Do.
5	do	10	20	10	10.04	342,700	34,120	Deflected diagonally.
6	do	10	25	0	10.00	318,300	31,320	Deflected diagonally and channel bars buckled.
26	do	10	25	0	10.30	284,300	32,180	Do.
27	do	10	29	2	9.57	281,200	32,380	Deflected horizontally.
1109	do	12	10	0	12.13	408,000	33,420	Do.
17	do	12	10	0	12.06	423,000	33,670	Channel bars buckled.
15	do	12	15	0	12.12	410,000	32,530	Do.
16	do	12	15	0	12.12	410,000	32,530	Do.
9	do	12	20	0	12.93	442,000	34,380	Do.
10	do	12	20	0	12.83	411,900	33,610	Do.
7	do	12	25	0	12.34	418,000	32,640	Do.
8	do	12	25	0	12.144	407,900	32,540	Do.
28	do	12	30	0	12.13	385,000	31,510	Do.
29	do	12	30	0	12.54	383,000	31,340	Deflected horizontally.

LATTICE COLUMNS AND CHANNEL BARS, FROM DETROIT BRIDGE AND IRON COMPANY.

Tabulation of experiments on wrought-iron columns.

LATTICED COLUMNS, BUILT BY THE DETROIT BRIDGE AND IRON COMPANY.

Columns with pin ends tested with pins vertical. Channel bars spaced 8 inches apart.



No. of test.	Kind.	Channel bars.	Length.	Sectional area.	Ultimate strength.		Manner of failure.
					Actual.	Per square inch.	
1059	Flat ends	Inches.	Ft.	In.	Sq. inches.	Pounds.	
1060	do	6	10	0	174,800	36,720	Channel bars buckled.
1061	do	6	10	0	166,000	45,230	Do.
1065	One flat end; one pin end	6	10	0	160,000	32,660	Do.
1066	do	6	10	0	154,800	32,660	Do.
1067	Pin ends	6	12	0	159,800	34,740	Horizontal deflection.
1106	do	6	12	0	136,100	34,160	Do.
1	do	6	12	6	163,600	32,860	Do.
2	do	6	12	6	153,500	32,860	Do.
1231	do	6	15	0	151,500	31,820	Do.
1232	do	6	15	0	157,500	34,540	Do.
1229	do	6	17	6	152,600	32,750	Do.
1230	do	6	17	6	147,500	31,120	Do.
1117	do	6	20	6	136,000	29,180	Do.
1118	do	6	20	6	143,500	30,990	Do.
1119	do	6	22	6	139,800	30,560	Do.
1120	do	6	22	6	144,700	31,080	Do.
1121	do	6	25	0	110,000	22,360	Do.
1122	do	6	25	0	117,500	23,800	Do.
20	do	6	27	6	102,500	21,850	Do.
21	do	6	27	6	97,500	20,710	Do.
18	do	6	30	0	69,300	14,740	Do.
19	do	6	30	0	75,300	15,060	Do.
1111	do	8	13	4	281,300	34,310	Deflected horizontally and channel bars buckled.
1112	do	8	13	4	284,300	35,240	Deflected horizontally and channel bars buckled.
1113	do	8	16	8	254,100	32,970	Do.
1114	do	8	16	8	251,400	32,610	Do.
1115	do	8	19	0	246,200	32,610	Do.
1116	do	8	20	0	241,400	32,140	Deflected horizontally and vertically.
1123	do	8	23	4	857,500	37,280	Deflected horizontally.
1124	do	8	23	4	846,000	31,570	Do.
23	do	8	25	8	215,800	27,340	Do.
24	do	8	25	8	215,800	27,340	Do.
25	do	8	28	0	194,100	24,850	Do.

23	do	8	23	0	7.80	210,000	26,920	Do.
13	do	10	12	6	9.68	344,100	35,550	Channel bars buckled.
14	do	10	12	6	9.59	339,000	35,350	Do.
11	do	10	16	8	9.55	323,200	33,840	Do.
12	do	10	16	8	9.61	328,700	34,000	Do.
3	do	10	20	10	9.74	330,000	33,880	Do.
4	do	10	20	10	9.806	330,100	33,660	Deflected diagonally.
5	do	10	25	0	10.04	342,700	34,130	Deflected diagonally and channel bars buckled.
6	do	10	25	0	10.00	319,300	31,930	Do.
26	do	10	29	2	9.30	299,300	32,180	Deflected horizontally.
27	do	10	29	2	9.57	281,200	28,380	Do.
1109	do	12	10	0	12.15	408,000	33,420	Channel bars buckled.
17	do	12	10	0	12.06	423,000	35,070	Do.
15	do	12	15	0	12.12	410,000	33,830	Do.
16	do	12	15	0	12.47	442,000	35,490	Do.
9	do	12	20	0	11.98	411,000	34,360	Do.
10	do	12	20	0	12.34	414,900	35,610	Do.
7	do	12	25	0	12.144	400,000	32,940	Do.
8	do	12	25	0	11.91	407,800	34,240	Do.
28	do	12	30	0	12.18	385,000	31,610	Do.
29	do	12	30	0	12.54	383,000	31,340	Deflected horizontally.

Tabulation of experiments on wrought-iron columns—Continued.

COMPRESSION TESTS OF CHANNEL BARS, SIZES USED IN THE PRECEDING LATTICED COLUMNS.

No. of test.	Kind.	Size of bars.	Length.	Sectional area.	Ultimate strength.		Manner of failure.
					Actual.	Per square inch.	
			<i>Inches.</i>	<i>Sq. inches.</i>	<i>Pounds.</i>		
1049	Flat ends	6	6	2.33	94,530	42,280	Flanges buckled inward.
1050	do	6	6	2.33	98,840	42,685	Do.
1071	do	6	17.58	2.37	83,840	35,100	Deflection.
1072	do	6	17.70	2.33	82,840	35,160	Do.
1069	do	6	23.83	2.37	77,400	32,660	Do.
1070	do	6	23.80	2.37	77,400	32,660	Do.
1074	do	6	44	2.34	64,980	27,760	Do.
1051	do	6	8	2.35	164,700	42,740	Flanges buckled inward.
1052	do	8	8	3.35	168,800	42,310	Web buckled outward; flanges inward.
1068	do	8	17.90	3.73	131,800	35,340	Flanges bent outward.
1065	do	8	23.85	3.73	134,300	36,160	Deflection.
1066	do	8	23.85	3.73	134,300	36,160	Do.
1067	do	8	29.80	3.73	124,000	33,400	Do.
1068	do	8	44	3.73	114,300	30,690	Do.
1065	do	10	10	4.73	168,100	34,310	Flanges buckled inward.
1064	do	10	17.85	4.73	169,000	35,350	Flanges buckled outward.
1074	do	10	23.80	5.04	171,000	33,830	Flanges buckled inward.
1075	do	10	23.87	5.04	171,000	33,680	Flanges buckled outward.
1076	do	10	29.80	4.74	169,500	33,630	Flanges buckled inward.
1073	do	10	44	4.74	169,100	33,050	Do.
1062	do	12	12	4.78	167,250	34,080	Deflection.
1065	do	12	12	5.97	222,300	37,240	Web bent inward; flanges outward.
1066	do	12	12	5.97	222,300	37,240	Do.
1066	do	12	17.84	5.95	217,700	34,500	Do.
1079	do	12	23.93	6.02	218,000	35,350	Web bent outward; flanges inward.
1077	do	12	23.87	6.02	218,000	37,010	Do.
1078	do	12	29.80	5.96	209,600	35,150	Do.
1060	do	12	44	6.19	223,100	36,040	Web bent inward; flanges outward.
1061	do	12	44	6.19	223,100	36,040	Do.

Tabulation of experiments on wrought-iron columns—Continued.

LATTICED COLUMNS BUILT BY THE DETROIT BRIDGE AND IRON COMPANY.

Columns tested with pins vertical. Channel bars spaced 6 inches apart.

No. of test.	Kind.	Channel bars.	Length.	Sectional area.	Ultimate strength.		Manner of failure.
					Actual.	Per square inch.	
463	P'n ends.....	Inches.	Ft. In.	Sq. inches.	Pounds.	Pounds.	
464	do.....	0	29 0	4.68	117,000	25,000	Deflected horizontally.
465	do.....	8	29 0	4.98	71,500	15,260	Do.
466	do.....	8	29 0	7.75	215,500	27,700	Do.
467	do.....	10	29 0	7.75	201,500	26,000	Do.
468	do.....	10	29 0	8.19	273,500	29,800	Deflected upward
469	do.....	10	29 0	8.19	284,000	22,000	Deflected horizontally.
470	do.....	12	29 0	12.80	373,200	28,970	Deflected upward.
471	do.....	12	29 0	12.80	388,500	30,000	Deflected horizontally.

CIRCULAR COLUMNS, 4-SEGMENTS, BUILT BY THE PHENIX IRON COMPANY.

Tested with diameter through flanges 45 degrees from vertical. □

No. of test.	Kind.	Diameter.	Length.	Sectional area.	Ultimate strength.		Manner of failure.
					Actual.	Per square inch.	
325	Flat ends.....	Inches.	Ft. In.	Sq. inches.	Pounds.	Pounds.	
327	do.....	8.04	0 30	11.61	651,000	56,070	Web bulged near end.
328	do.....	8.04	29.04	11.902	628,500	52,800	Web bulged at middle of column.
329	do.....	8.04	11 10 6 1/2	12.181	498,000	38,256	Deflected downward.
330	do.....	8.04	31 0	11.43	354,000	31,150	Deflected upward and horizontally.
331	do.....	8.04	31 0	11.31	370,500	32,760	Do.
332	do.....	8.04	31 6	11.66	383,900	31,180	Do.
333	do.....	8.04	31 6	11.58	373,100	32,220	Do.

Tabulation of experiments on wrought-iron columns—Continued.

AMERICAN BRIDGE COMPANY'S STEEL COLUMNS.

Column with pin ends, tested with pins vertical.

No. of test.	Kind.	Size.	Length.	Sectional area.	Ultimate strength.		Manner of failure.
					Actual.	Per square inch.	
1058 30	Flat ends.....	<i>Inches.</i> 10.27×10.30	<i>Ft. In.</i> 43.1	<i>Sq. inches.</i> 15.28	<i>Pounds.</i> 719,000	<i>Pounds.</i> 47,055	Flanges buckled. Deflected horizontally.
	Pin ends.....	10.27×80.35	30 0.44	15.23	290,000	18,960	

LATTICED COLUMN BUILT BY THE KELLOGG BRIDGE COMPANY.

Column tested with pin vertical.

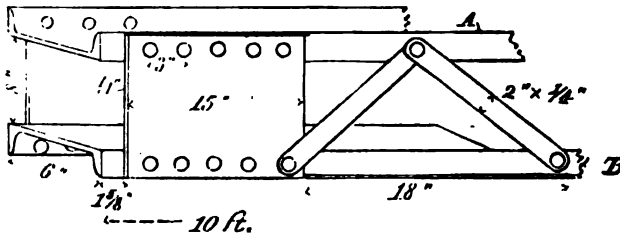
No. of test.	Kind.	Channel bars.	Length.	Sectional area.	Ultimate strength.		Manner of failure.
					Actual.	Per square inch.	
492	One flat end; one pin end.....	<i>Inches.</i> 9.92	<i>Ft. In.</i> 21 8	<i>Sq. inches.</i> 17.65	<i>Pounds.</i> 381,000	<i>Pounds.</i> 22,729	Deflected horizontally and upward.

LATTICE COLUMNS.

From Detroit Bridge and Iron Company.

1059.

Two flat ends.

Latticing staggered $\frac{1}{2}$ -inch rivets.

Weight of channel A, 80 pounds—10 feet 1 inch	area...	Sq. in. 2.38
Weight of channel B, 80 pounds—10 feet 1 inch	area...	2.38
		4.76

Weight per yard, 23.8 pounds.

Sectional area, 4.76 square inches.

Cast-iron separator 17 inches from each end.

Column unsupported between ends.

Gauged length, 80 inches.

Ends required packing to bring to good bearings.

Loads applied.	Compression.	Set.	Deflection.		Remarks.
			Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	Inch.	
10,000	.0061	.....	— .02	0.	
20,000	.0121	.....	— .02	0.	
30,000	.0186	.....	— .02	0.	
40,000	.0256	.....	— .02	.01	
50,000	.....	.0016	— .02	.01	
60,000	.0316	.....	— .02	.02	
70,000	.0371	.....	— .02	.03	
80,000	.0431	.....	— .02	.03	
90,000	.0494	.....	— .02	.04	
100,000	.0554	.....	0.	.04	
110,000	.....	.0021	— .01	.01	
115,000	.0616	.....	— .02	.04	
120,000	.0651	.....	0.	.05	
125,000	.0686	.....	— .01	.06	
130,000	.0726	.....	0.	.06	
135,000	.....	.0041	0.	.02	
140,000	.0744	.....	0.	.07	
145,000	.0786	.....	0.	.07	
150,000	.....	.....	0.	.07	Elastic limit, 28,800 pounds per square inch.
155,000	.0834	.....	0.	.07	
160,000	.0884	.....	0.	.07	
165,000	.0940	.....	0.	.08	
170,000	.....	.0111	0.	.03	
175,000	.1000	.....	0.	.08	
180,000	.1110	.....	0.	.09	
185,000	.1208	.....	0.	.10	
190,000	.....	.0284	0.	.04	
195,000	.1416	.....	.02	.10	
200,000	.....	.....	.....	.....	Ultimate strength = 26,720 pounds per square inch.

Column failed by buckling of channels between the lattice bars. Strains continued after passing the ultimate strength or maximum load which the column would sustain till yielding occurred under 75,000 pounds compression. At this time, owing to the buckling of the channel bars, the spacing of the latticing was reduced from 18 inches to 17½ inches in the second section from the end. Rivet cut off at severely bent section. No apparent injury to flange of channel bar or to lattice bars.

1060.—6×8 INCHES LATTICE COLUMN.

Same as 1059.

	Sq. in.
Weight of upper channel bar, 79 pounds—10 feet 1 inch	2.35
Weight of lower channel bar, 78 pounds—10 feet 1 inch	2.32
	<hr/> 4.67

Gauged length, 80 inches.

Ends required packing to bring to good bearings.

Loads applied.	Compression.	Set.	Deflection.		Remarks.
			Horizontal.	Vertical.	
Pounds.	Inch.		Inch.	Inch.	
10,000					
20,000	.0065		0.	0.	
30,000	.0135		.01	0.	
40,000	.0200		.01	0.	
50,000	.0263		.02	0.	
60,000	.0310		0.	0.	
70,000	.0385		.03	.01	
80,000	.0450		.03	.02	
90,000	.0515		.04	.03	
100,000	.0583		.04	.04	
110,000	.0665		0.	0.	
120,000	.0700		.04	.04	
130,000	.0745		.04	.04	
140,000	.0790		.04	.04	
150,000	.0890		0.	0.	
160,000	.0840		.04	.04	
170,000	.0895		.04	.04	
180,000	.0950		.05	.05	
190,000	.1020		.05	.05	
200,000	.1090		.05	.05	
210,000	.1245		.02	.01	
220,000	.1195		.05	.05	
230,000	.1365		.07	.05	
240,000					
250,000					
260,000					
270,000					
280,000					
290,000					
300,000					
310,000					
320,000					
330,000					
340,000					
350,000					
360,000					
370,000					
380,000					
390,000					
400,000					
410,000					
420,000					
430,000					
440,000					
450,000					
460,000					
470,000					
480,000					
490,000					
500,000					
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710,000					
720,000					
730,000					
740,000					
750,000					
760,000					
770,000					
780,000					
790,000					
800,000					
810,000					
820,000					
830,000					
840,000					
850,000					
860,000					
870,000					
880,000					
890,000					
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970,000					
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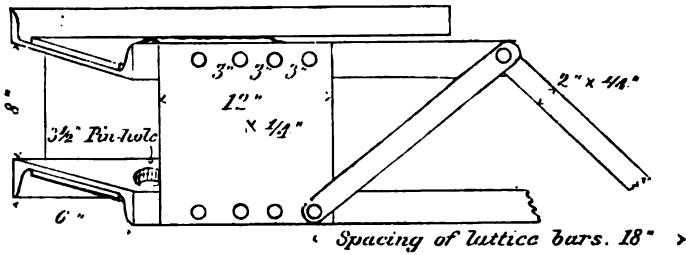
Elastic limit, 25,700 pounds per square inch.

Ultimate strength = 35,330 pounds per square inch.

Column failed same as 1059, by buckling the channel bars between the latticing.

1095.—LATTICE COLUMN.

One pin end. One flat end.



One-half inch thickening plate held by four rivets.
Length from centre of pin-hole to flat end, 10 feet.

Upper channel, 10 feet 5 inches	83 pounds..	Sq. in. 2.39
Lower channel, 10 feet 5 inches	82 pounds..	2.36
Sectional area		4.75

Gauged length, 80 inches.
Column not counterweighted.
Packing required behind upper channel at flat end.

Loads applied.	Compression.	Set.	Deflection.		Remarks.
			Horizontal.	Vertical.	
Pounds.	Inch.		Inch.	Inch.	
10,000			0.	0.	
20,000	.0060		0.	0.	
30,000	.0110		0.	0.	
40,000	.0170		0.	0.	
50,000	.0225		0.	0.	
60,000	0.		0.	0.	
70,000	.0225		0.	0.	
80,000	.0358		0.	0.	
90,000	.0420		0.	.01	
100,000	.0485		0.	.01	
110,000	.0550		0.	.01	
120,000	.0620		0.	0.	
130,000	.0690		0.	.01	
140,000	.0774		0.	.02	
150,000	.0858		0.	.02	
160,000	.0945		0.	.02	
170,000	.1044		0.	.02	
180,000	.1150		0.	.02	
190,000			0.	.02	
200,000			0.	.02	
210,000			0.	.02	
220,000			0.	.02	
230,000			0.	.02	
240,000			0.	.02	
250,000			0.	.02	
260,000			0.	.02	
270,000			0.	.02	
280,000			0.	.02	
290,000			0.	.02	
300,000			0.	.02	
310,000			0.	.02	
320,000			0.	.02	
330,000			0.	.02	
340,000			0.	.02	
350,000			0.	.02	
360,000			0.	.02	
370,000			0.	.02	
380,000			0.	.02	
390,000			0.	.02	
400,000			0.	.02	
410,000			0.	.02	
420,000			0.	.02	
430,000			0.	.02	
440,000			0.	.02	
450,000			0.	.02	
460,000			0.	.02	
470,000			0.	.02	
480,000			0.	.02	
490,000			0.	.02	
500,000			0.	.02	
510,000			0.	.02	
520,000			0.	.02	
530,000			0.	.02	
540,000			0.	.02	
550,000			0.	.02	
560,000			0.	.02	
570,000			0.	.02	
580,000			0.	.02	
590,000			0.	.02	
600,000			0.	.02	
610,000			0.	.02	
620,000			0.	.02	
630,000			0.	.02	
640,000			0.	.02	
650,000			0.	.02	
660,000			0.	.02	
670,000			0.	.02	
680,000			0.	.02	
690,000			0.	.02	
700,000			0.	.02	
710,000			0.	.02	
720,000			0.	.02	
730,000			0.	.02	
740,000			0.	.02	
750,000			0.	.02	
760,000			0.	.02	
770,000			0.	.02	
780,000			0.	.02	
790,000			0.	.02	
800,000			0.	.02	
810,000			0.	.02	
820,000			0.	.02	
830,000			0.	.02	
840,000			0.	.02	
850,000			0.	.02	
860,000			0.	.02	
870,000			0.	.02	
880,000			0.	.02	
890,000			0.	.02	
900,000			0.	.02	
910,000			0.	.02	
920,000			0.	.02	
930,000			0.	.02	
940,000			0.	.02	
950,000			0.	.02	
960,000			0.	.02	
970,000			0.	.02	
980,000			0.	.02	
990,000			0.	.02	
1,000,000			0.	.02	
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1,070,000			0.	.02	
1,080,000			0.	.02	
1,090,000			0.	.02	
1,100,000			0.	.02	
1,110,000			0.	.02	
1,120,000			0.	.02	
1,130,000			0.	.02	
1,140,000			0.	.02	
1,150,000			0.	.02	
1,160,000			0.	.02	
1,170,000			0.	.02	
1,180,000			0.	.02	
1,190,000			0.	.02	
1,200,000			0.	.02	
1,210,000			0.	.02	
1,220,000			0.	.02	
1,230,000			0.	.02	
1,240,000			0.	.02	
1,250,000			0.	.02	
1,260,000			0.	.02	
1,270,000			0.	.02	
1,280,000			0.	.02	
1,290,000			0.	.02	
1,300,000			0.	.02	
1,310,000			0.	.02	
1,320,000			0.	.02	
1,330,000			0.	.02	
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1,350,000			0.	.02	
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1,370,000			0.	.02	
1,380,000			0.	.02	
1,390,000			0.	.02	
1,400,000			0.	.02	
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1,560,000			0.	.02	
1,570,000			0.	.02	
1,580,000			0.	.02	
1,590,000			0.	.02	
1,600,000			0.	.02	
1,610,000			0.	.02	
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1,650,000			0.	.02	
1,660,000			0.	.02	
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1,680,000			0.	.02	
1,690,000			0.	.02	
1,700,000			0.	.02	
1,710,000			0.	.02	
1,720,000			0.	.02	
1,730,000			0.	.02	
1,740,000			0.	.02	
1,750,000			0.	.02	
1,760,000			0.	.02	
1,770,000			0.	.02	
1,780,000			0.	.02	
1,790,000			0.	.02	
1,800,000			0.	.02	
1,810,000			0.	.02	
1,820,000			0.	.02	
1,830,000			0.	.02	
1,840,000			0.	.02	
1,850,000			0.	.02	
1,860,000			0.	.02	
1,870,000			0.	.02	
1,880,000			0.	.02	
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2,580,000			0.	.02	
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2,830,000			0.	.02	
2,840,000			0.	.02	
2,850,000			0.	.02	
2,860,000			0.	.02	
2,870,000			0.	.02	
2,880,000			0.	.02	
2,890,000			0.		

1096.—6-INCH COLUMN.

Same as 1095.

Upper channel, 10 feet 5 inches.....	79 pounds..	Sq. in. 2.2
Lower channel, 10 feet 5 inches.....	80 pounds..	2.30

Sectional area 4.56

Gauged length, 80 inches.

Packing required behind lower channel, flat end.

Loads applied.	Compression.	Set.	Deflection.		Remarks.
			Horizontal.	Vertical.	
Pounds.	Inch.		Inch.	Inch.	
10,000			0.	0.	
20,000	.0090		0.	— .02	
30,000	.0161		0.	— .02	
40,000	.0241		0.	— .03	
50,000	.0316		0.	— .03	
10,000	.0011		0.	0.	
60,000	.0381		0.	— .03	
70,000	.0444		0.	— .03	
80,000	.0511		0.	— .03	
90,000	.0580		0.	— .03	
100,000	.0654		0.	— .03	
10,000	.0050		0.	0.	
105,000	.0690		0.	— .03	
110,000	.0730		0.	— .03	
115,000	.0764		0.	— .03	
120,000	.0804		0.	— .03	
125,000	.0846		0.	— .03	
10,000	.0126		0.	— .03	
130,000	.0890		0.	— .02	
135,000	.0946		— .02	— .01	Rested one hour.
140,000	.0990		— .01	— .01	
145,000	.1084		— .02	0.	
150,000	.1316		— .05	— .03	
10,000	.0520		— .03	— .04	
154,800					Ultimate strength = 23,000 pounds per square inch.

Failed by channels buckling between the latticing.

1107.—6-INCH CHANNELS. 8 inches apart.

Length, c. to c. of pin holes, 12 feet.

Gauged length, 100 inches.

Two pin ends. Pins vertical. No counterweight.

For dimensions, see 1095.

Upper channel, 12 feet 8 inches.....	97 pounds..	Sq. in. 2.298
Lower channel, 12 feet 8 inches.....	97 pounds..	2.298

Sectional area 4.6

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000		0.	0.	
10,000	.0032	0.	0.	
20,000	.0100	0.	.01	
30,000	.0176	0.	.01	
40,000	.0262	0.	.01	
50,000	.0346	0.	.01	
5,000	.0006	0.	0.	
60,000	.0422	0.	.01	
70,000	.0502	0.	.02	
80,000	.0582	0.	.02	

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
80,000	.0670	0.	.03	
100,000	.0757	0.	.04	
5,000	.0026	0.	.04	
110,000	.0852	0.	.05	
120,000	.0967	0.	.05	
130,000	.1100	0.	.05	
140,000	.1247	— .01	.05	
140,000	.1262	— .01	.05	
150,000	.1420	— .03	.03	
5,000	.0296	— .01	0.	
150,800	.....	— .40	.20	Ultimate strength; deflection continued.
158,300	.....	— .35	.16	Column revolved on swivel bearings, bringing pins into horizontal position, concave side up.
5,000	.....			Column loaded with 585 pounds of lead.
142,400	.....			Yields.

Deflection continued till column yielded under 129,900 pounds. Load then released to 5,000 pounds and allowed to rest one hour and a quarter, to determine the effect of resting after having been deflected. After resting yielding began at 129,000 pounds.

Column failed by deflection, horizontal in plane of pins. Pin holes not elongated.

1108.—6-INCH CHANNELS. 8 inches apart.

Length, c. to c. of pin holes, 12 feet.

Gauged length, 100 inches.

Same as 1107.

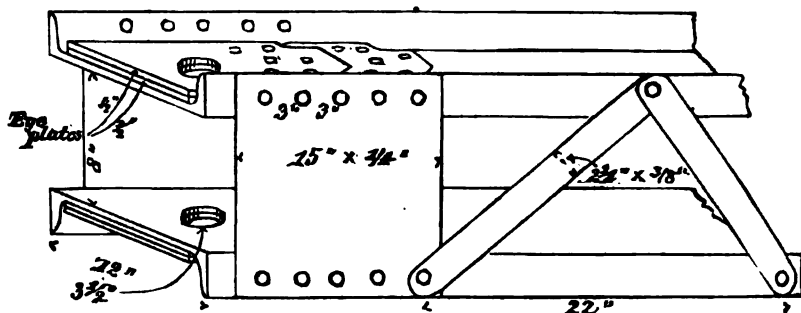
Upper channel bar, 12 feet 8 inches .....	.98 pounds..	Sq. in. 2.321
Lower channel bar, 12 feet 8 inches .....	.95 pounds..	2.250

Sectional area..... 4.57

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000	.....	0.	0.	
10,000	.0035	0.	0.	
30,000	.0193	0.	0.	
50,000	.0370	0.	0.	
5,000	0.	0.	0.	
60,000	.0449	0.	.01	
70,000	.0530	0.	.02	
80,000	.0619	.01	.03	
90,000	.0700	.01	.03	
100,000	.0789	.02	.04	
5,000	.0030	.02	0.	
110,000	.0863	.02	.04	
120,000	.0965	.02	.04	
130,000	.1123	.05	.05	
130,000	.1185	.05	.05	
140,000	.1279	.05	.05	
150,000	.1485	.10	.08	
156,100	.....	.44	.15	Ultimate strength; deflection continued.
154,600	.....	.35	.13	15-inch shot at middle of column pins; horizontal weight of shot, 400 pounds.
5,000	.....			Yielding begins.
142,200	.....		

15-inch shot raised, and column sustained 143,000 pounds before yielding began. Deflection at middle, .63 inch.

1109.—12-INCH CHANNELS. 8 inches apart.



Total length, c. to c. of pin holes, 10 feet.

Total weight, 730 pounds.

Upper channel, 10 feet 8 inches	217 pounds..	84. in. 6. 102
Lower channel, 10 feet 8 inches	215 pounds..	6. 046

Sectional area 12. 15

Gauged length, 70 inches.

Packing required behind bolster at each end.

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0010	0.	0.	
50,000	.0100	0.	0.	
100,000	.0205	0.	0.	
5,000	0.	0.	0.	
150,000	.0305	0.	0.	
175,000	.0359	0.	0.	
200,000	.0410	0.	0.	
5,000	.0005	0.	0.	
225,000	.0465	0.	0.	
250,000	.0519	0.	.01	
275,000	.0573	0.	.01	
300,000	.0630	0.	.02	
5,000	.0015	0.	0.	
320,000	.0683	0.	.03	
340,000	.0739	0.	.04	
350,000	.0769	0.	.04	
5,000	.0040	0.	.01	
360,000	.0800	0.	.05	
370,000	.0833	0.	.06	
380,000	.0879	0.	.07	
390,000	.0930	0.	.07	
400,000	.1000	.03	.09	
5,000	.0100	0.	.06	
406,000				Ultimate strength, 33,430 pounds per square inch.

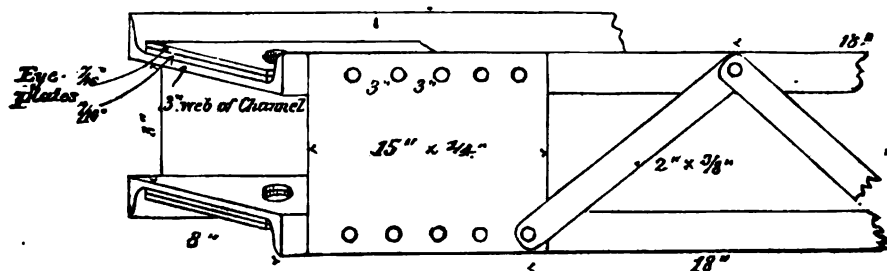
Column failed by buckling of channel bars between latticing.

Pin holes elongated about .03 inch.

Riveting of eye plates not started.

3½-inch pins bent about .005 inch concave between bolster bearings.

1111.—8-INCH CHANNELS. 8 inches apart.



Total length, c. to c. of pin holes, 13 feet 4 inches.

Gauged length, 120 inches.

	Sq. in.
Upper channel, 14 feet.....	175 pounds.. 3.750
Lower channel, 14 feet.....	176 pounds.. 3.771
Sectional area	7.52

Total weight, 621 pounds.

Loads.	Compression.	Deflection.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000	0.040	0.	0.	Column was brought into testing-room while hot from lying in the sun. Initial reading was taken, and then the column was allowed to rest $\frac{1}{2}$ hour. The lowering of the temperature may account for the apparent permanent compression of .0024 inch after load of 50,000 pounds.
10,000	.0080	0.	0.	
20,000	.0080	0.	0.	
40,000	.0190	0.	.01	
50,000	.0244	0.	.01	
5,000	.0024	0.	0.	
80,000	.0400	0.	.01	
100,000	.0510	0.	.02	
5,000	.0025	0.	0.	
110,000	.0570	0.	.02	
120,000	.0628	0.	.02	
130,000	.0680	— .01	.02	
140,000	.0744	— .01	.02	
150,000	.0805	— .01	.02	
5,000	.0038	0.	0.	
160,000	.0865	— .01	.02	
170,000	.0930	— .01	.02	
180,000	.0995	— .01	.02	
190,000	.1068	— .01	.02	
200,000	.1140	— .01	.02	
5,000	.0070	0.	0.	
210,000	.1220	— .01	.02	
220,000	.1320	— .01	.02	
230,000	.1440	— .01	.02	
240,000	.1580	— .01	.02	
250,000	.1770	— .02	.04	
261,800				Ultimate strength, 34,810 pounds per square inch.

Column failed by deflecting upwards and buckling the channels between the latticing. It seems probable that the direction of the deflection was caused by the channel bars not being closely enough latticed. Pin holes elongated about .02 inch.

1112.—8-INCH CHANNELS. 8 inches apart.

Same as 1111..

Length, c. to c., pin holes, 13 feet 4 inches.

Total weight, 620 pounds.

Upper channel, 14 feet	175 pounds..	Sq. in. 3.750
Lower channel, 14 feet	175 pounds..	3.750
Sectional area		7.50

Counterweighted at middle.

Gauged length, 120 inches.

Loads.	Compression.	Deflection.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000		0.	0.	
20,000	.0030	0.	.02	
40,000	.0105	0.	.05	
50,000	.0158	0.	.06	
5,000	+.0008			Brass packing put behind bolster.
80,000	.0340	0.	.05	
100,000	.0454	0.	.05	
5,000	+.0005	0.	0.	
110,000	.0510	0.	.05	
120,000	.0568	0.	.05	
130,000	.0625	0.	.06	
140,000	.0684	0.	.06	
150,000	.0745	0.	.06	
5,000	0.	0.	0.	
160,000	.0805	0.	.06	
170,000	.0870	0.	.06	
180,000	.0935	0.	.06	
190,000	.1010	0.	.06	
200,000	.1084	0.	.06	
5,000	.0024	0.	.01	
210,000	.1170	0.	.06	
220,000	.1265	0.	.06	
230,000	.1384	0.	.06	
240,000	.1535	0.	.06	
250,000	.1708	0.	.06	
264,300				Ultimate strength, 35,240 pounds per square inch.

Failed by deflecting horizontally in plane of pins, the channels buckling between the latticing. Pin holes elongated about .02 inch.

1113.—8-INCH CHANNELS. 8 inches apart.

Length, c. to c. of pin holes, 16 feet 8 inches.

Total weight, 720 pounds.

Upper channel, 17 feet 4 inches.....	216 pounds..	Sq. in. 3.738
Lower channel, 17 feet 4 inches	216 pounds..	3.738
Sectional area		7.48

Gauged length, 150 inches.

Counterweighted at middle.

Loads.	Compression.	Deflection.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000		0.	0.	
10,000	.0085	0.	.01	
20,000	.0095	0.	.03	
30,000	.0173	0.	.04	
40,000	.0245	0.	.04	
50,000	.0325	0.	.05	
5,000	.0013	0.	0.	
60,000	.0399	0.	.05	
70,000	.0469	0.	.05	
80,000	.0540	0.	.05	
90,000	.0615	0.	.05	
100,000	.0689	0.	.05	
5,000	.0015	0.	.01	
110,000	.0760	.01	.05	
120,000	.0835	.01	.06	
130,000	.0909	.01	.06	
140,000	.0985	.01	.06	
150,000	.1060	.01	.06	
5,000	.0023	0.	.02	
160,000	.1133	.02	.06	
170,000	.1210	.02	.06	
180,000	.1299	.02	.06	
190,000	.1385	.02	.06	
200,000	.1483	.02	.06	
5,000	.0089	0.	.02	
210,000	.1593	.02	.05	
220,000	.1730	.02	.05	
230,000	.1905	.03	.04	
240,000	.2119	.03	.04	
250,000	.2405	.10	.04	
254,100				Ultimate strength = 33,970 pounds per square inch.

Failed by deflecting in plane of pins. Deflection continued till it reached .4 inch at the middle, the column carrying 254,100 pounds, but slowly yielding all the time. Position of column was changed, bringing the pins to a horizontal position with the concave side of the column up. Counterweights removed.

Column loaded at middle with 500 pounds. Load sustained, 230,800 pounds.

500 pounds immediately removed. Load sustained, 233,400 pounds; showing an increased resistance of 2,600 pounds.

Pin holes elongated about .01 inch.

1114.—8-INCH CHANNELS. 8 inches apart.

Length, c. to c., pin holes, 10 feet 8 inches.

Duplicate of 1113.

Total weight, 720 pounds.

Upper channel, 17 feet 4 inches.....	215 pounds..	Sq. in. 3.721
Lower channel, 17 feet 4 inches.....	217 pounds..	3.755
Sectional area.....		7.48

Counterweighted at middle.

Ends required packing to secure good bearings.

Loads.	Compression.	Deflection.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000	0.0055	0.	0.	
10,000	.0145	0.	-.01	
20,000	.0210	0.	-.04	
30,000	.0290	0.	-.04	
40,000	.0394	0.	-.04	
50,000	.0620	0.	0.	
60,000	.0460	0.	-.04	
70,000	.0530	0.	-.04	
80,000	.0600	0.	-.04	
90,000	.0674	0.	-.04	
100,000	.0745	0.	-.04	
110,000	.0825	0.	0.	
120,000	.0824	0.	-.03	
130,000	.0894	0.	-.02	
140,000	.0968	0.	-.01	
150,000	.1040	0.	-.01	
160,000	.1115	0.	-.01	
170,000	.0048	0.	0.	
180,000	.1194	0.	0.	
190,000	.1275	0.	0.	
200,000	.1365	0.	0.	
210,000	.1465	0.	0.	
220,000	.1580	0.	0.	
230,000	.0190	0.	-.04	
240,000	.1700	0.	-.01	
250,000	.1830	0.	-.01	
260,000	.1978	-.02	-.03	
270,000	.2164	-.01	-.03	
280,000	.2474	-.18	-.05	
291,400				Ultimate strength=33,610 pounds per square inch.

Column failed by deflecting horizontally in the plane of the pins.

Strains relieved when deflection at middle had reached about .3 inch.

Column revolved, bringing pins horizontal, concave side of column up.

With load of 500 pounds at middle, load of 230,700 pounds sustained.
 With load of 500 pounds at middle removed, load of 233,900 pounds sustained.

Effect of 500 pounds at middle..... 3,200 pounds.

Pin holes elongated about .01 inch.

1115.—8-INCH CHANNELS. 8 inches apart.

Details same as 1111.

Total length, c. to c. of pin holes, 20 feet.

Gauged length, 200 inches.

Upper channel, 20 feet 8 inches.....	257 pounds..	Sq. in. 3.731
Lower channel, 20 feet 8 inches.....	263 pounds..	3.818
Sectional area.....		7.55

Total weight, 846 pounds.

Counterweighted at middle.

Packing used behind bolsters.

Loads.	Compression.	Deflection.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0061	0.	— .01	
20,000	.0146	0.	— .01	
30,000	.0261	0.	— .01	
40,000	.0381	0.	— .04	
50,000	.0484	0.	— .05	
5,000	.0006	0.	0.	
60,000	.0576	0.	— .05	
70,000	.0676	0.	— .05	
80,000	.0774	0.	— .06	
90,000	.0876	0.	— .06	
100,000	.0961	0.	— .07	
5,000	.0022	0.	— .01	
110,000	.1080	0.	— .07	
120,000	.1176	0.	— .07	
130,000	.1264	0.	— .07	
140,000	.1376	0.	— .07	
150,000	.1481	0.	— .08	
5,000	.0050	0.	— .01	
160,000	.1561	0.	— .08	
170,000	.1701	0.	— .08	Compression increased .001 inch
180,000	.1814	0.	— .09	after sustaining load 3 minutes.
190,000	.1951	0.	— .09	
200,000	.2091	— .01	— .10	
5,000	.0231	0.	— .05	
210,000	.2264	— .01	— .11	
220,000	.2461	— .02	— .14	"Cooper lines" on channels be-
230,000	.2676	— .02	— .17	tween lattice bars.
240,000	.3026	— .14	— .23	
246,200				Ultimate strength = 32,180 pounds
246,000		— .50	— .25	per square inch.
				Yielding under this load.

Failed by deflecting in plane of axis of pins.

1116.—8-INCH CHANNELS. 8 inches apart.

Like 1115.

Length, c. to c. of pin holes, 20 feet.

Gauged length, 200 inches.

Upper channel, 20 feet 8 inches.....	260 pounds..	Sq. in. 3.774
Lower channel, 20 feet 8 inches.....	257 pounds..	3.731
Sectional area.....		7.51

Counterweight at middle.

.05-inch packing used behind each bolster.

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000	-----	0.	0.	
10,000	.0041	0.	0.	
20,000	.0151	0.	0.	
30,000	.0324	0.	0.	
40,000	.0320	0.	0.	
50,000	.0396	0.	0.	
5,000	.0004	0.	0.	
60,000	.0491	0.	.02	
70,000	.0581	0.	.02	
80,000	.0676	.01	.02	
90,000	.0771	.02	.02	
100,000	.0871	.02	.02	
5,000	.0001	0.	0.	
110,000	.0976	.03	.03	
120,000	.1074	.03	.03	
130,000	.1170	.03	.03	
140,000	.1276	.03	.03	
150,000	.1381	.04	.03	
5,000	.0028	0.	0.	
160,000	.1496	.04	.03	
170,000	.1606	.05	.04	
180,000	.1716	.06	.05	
190,000	.1826	.06	.06	
200,000	.1951	.07	.06	
5,000	.0076	.01	.09	
210,000	.2071	.09	.10	
220,000	.2196	.10	.13	
230,000	.2331	.12	.20	
240,000	.2536	.25	.33	
241,400	-----	-----	-----	Ultimate strength=32,140 pounds per square inch.

Strains continued till horizontal deflection was .50 inch, vertical deflection .44 inch; the column then yielded under 240,600 pounds.

Column rotated, pins brought horizontal, concave side of column up. Counterweights removed.

With 500 pounds load at middle, load of.....207,000 pounds sustained.
With 500 pounds load at middle removed, load of.....215,200 pounds sustained.

Effect of 500 pounds load at middle..... 8,200 pounds.

Pin holes elongated about .01 inch.

1117.—6-INCH CHANNELS. 8 inches apart.

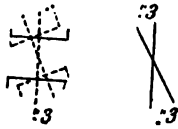
Details same as 1095, except that end plates were 15'' × ¼''.

Total length, c. to c. of pin holes, 20 feet.

Gauged length, 200 inches.

Upper channel, 20 feet 8 inches.....	159 pounds..	Sq in 2.37
Lower channel, 20 feet 8 inches	162 pounds..	2.32
Sectional area.....		4.68

Counterweighted at middle.
Pin holes not parallel.



Packing used behind one end.

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0100	0.	0.	
20,000	.0310	0.	-.02	
30,000	.0504	0.	-.05	
40,000	.0690	-.01	-.05	
50,000	.0814	-.03	-.05	
5,000	.0030	0.	0.	
60,000	.0965	-.04	-.04	
70,000	.1115	-.05	-.04	
80,000	.1265	-.08	-.03	
90,000	.1323	-.11	-.03	
100,000	.1585	-.15	-.02	
5,000	.0060	-.03	+.01	
110,000	.1740	-.15	-.01	
120,000	.1955	-.23	-.01	
130,000	.2224	-.41	-.02	
136,000				Ultimate strength = 29,180 pounds per square inch.

When strains reached 136,000 pounds the column suddenly deflected horizontally in the plane of the pins, bending so that the deflections at the middle were, horizontal, 3.30 inches; vertical, —.10 inch.

"Cooper lines" developed along the webs of the channel bars, at right angles to the axis of the column and opposite the rivets of the lattice bars, also between the rivet spacing about midway on the webs. Occasionally the "Cooper lines" were oblique to axis.

The most serious disturbance of the metal occurred at the middle of the column, where the web was reduced in section by two $\frac{1}{8}$ -inch holes for the bolts of a cast-iron separator, which was placed between the channels. Whatever advantage may be claimed for the employment of these separators, it is evident that the weakening of the column from the bolt holes is a serious disadvantage. The separator bolts in this series of column tests not filling the holes ($\frac{1}{8}$ -inch bolts being used), the weakening must be greater proportionately than for rivet holes which are filled and have the further support of the friction of the rivet heads.



Sketch of "Cooper lines" on web of channel bar at middle of column.

Pin holes not elongated.

1118.—6-INCH CHANNELS. 8 inches apart.

Like 1117.

Total length, c. to c. of pin holes, 20 feet.

Gauged length, 200 inches.

		Sq. in.
Upper channel, 20 feet 8 inches	158 pounds..	2.294
Lower channel, 20 feet 8 inches	161 pounds..	2.337
Sectional area		4.63

Total weight, 520 pounds.

Counterweights at middle.

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0074	0.	0.	
20,000	.0225	0.	0.	
30,000	.0374	0.	0.	
40,000	.0525	0.	0.	
50,000	.0685	0.	0.	
5,000	.0010	0.	0.	
60,000	.0840	0.	0.	
70,000	.0998	0.	0.	
80,000	.1180	0.	0.	
90,000	.1315	0.	-.01	
100,000	.1480	0.	-.02	
5,000	.0038	0.	0.	
105,000	.1565	0.	-.02	
110,000	.1650	0.	-.03	
115,000	.1745	0.	-.04	
120,000	.1850	.02	-.05	
125,000	.1960	.05	-.06	
130,000	.2084	.07	-.08	
135,000	.2210	.10	-.10	
140,000	.2370	.18	-.12	
143,500				Ultimate strength — 30,000 pounds per square inch.

Failed by deflecting horizontally in plane of pins. Deflection proceeded gradually till it had reached .70 inch, when the column suddenly bent, increasing the deflection to 3.5 inches while under strain, or 1.25 inch permanent deflection.

"Cooper lines" developed same as in 1117.

Column rotated, bringing pins horizontal, concave side of column up. Counterweights removed.

With load of 500 pounds at middle, load of..... 64,000 pounds sustained.
 With load of 500 pounds at middle removed, load of..... 66,700 pounds sustained.

Effect of 500 pounds at middle..... 2,700 pounds.

1119.—6-INCH CHANNELS. 8 inches apart.

Total length, c. to c. of pin holes, 22 feet 6 inches.

Gauged length, 230 inches.

Total weight, 578 pounds.

		Sq. in.
Upper channel, 23 feet 2 inches	174 pounds..	2.353
Lower channel, 23 feet 2 inches	179 pounds..	2.314
Sectional area		4.57

Counterweighted at middle.

Details same as 1095.

Pin holes not parallel \times ^{.15 inch.}
_{.15 inch.}

.01-inch packing used at one end, behind lower channel.

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0138	0.	— .02	
20,000	.0350	.01	— .06	
30,000	.0535	.01	— .06	
40,000	.0710	.03	— .06	
50,000	.0885	.04	— .05	
5,000	.0028	0.	— .08	
60,000	.1060	.05	— .03	
70,000	.1228	.05	— .03	
80,000	.1400	.07	— .01	
90,000	.1570	.08	0.	
100,000	.1750	.09	+ .01	
5,000	.0080	.02	.04	
105,000	.1855	.10	.02	
110,000	.1940	.11	.04	
115,000	.2040	.12	.04	
120,000	.2155	.13	.06	
125,000	.2275	.15	.06	
130,000	.2410	.19	.07	
135,000	.2544	.24	.10	
139,800				Ultimate strength = 30,590 pounds per square inch.

Failed by deflecting horizontally in plane of pins. When deflection reached 1.00 inch the column suddenly sprung, increasing the deflection to 4.30 inches.

Load released and permanent deflection = horizontal, 1.70 inch ; vertical, .15 inch.

Column rotated, bringing pins horizontal, concave side up.

Counterweights removed.

	Pounds.
With load of 500 pounds at middle, load sustained	53,600
With load of 500 pounds at middle removed, load sustained	57,900
Effect of 500 pounds at middle	4,300

1120.—6-INCH CHANNELS. 8 inches apart.

Like 1119.

Total length, c. to c. of pin holes, 22 feet 6 inches.

Gauged length, 230 inches.

Total weight, 590 pounds.

Counterweights at middle.

	Sq. in.
Upper channel, 23 feet 2 inches	180 pounds.. 2.331
Lower channel, 23 feet 2 inches	180 pounds.. 2.331
Sectional area	4.66
H. Ex. 12—8	

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0106	0.	0.	
20,000	.0314	0.	— .01	
30,000	.0546	0.	— .04	
40,000	.0721	0.	— .04	
50,000	.0890	0.	— .04	
5,000	.0041	0.	0.	
60,000	.1060	0.	— .03	
70,000	.1236	0.	— .02	
80,000	.1411	0.	— .02	
90,000	.1501	0.	— .02	
100,000	.1786	0.	— .02	
5,000	.0070	0.	— .02	
105,000	.1840	0.	— .01	
110,000	.1981	0.	— .01	
115,000	.2091	0.	— .01	
120,000	.2206	0.	— .01	
125,000	.2331	0.	— .01	
130,000	.2471	— .02	— .01	
135,000	.2596	— .06	— .01	
144,700		— .40	— .65	Ultimate strength=31,050 pounds per square inch.

After passing ultimate load, column gradually yielded, increasing deflections to — .60 inch and — .08 inch, at the same time reducing the load to 141,500 pounds compression. Column then deflected suddenly to: Horizontal — 4.55 inches and — .36 inch vertical.

Strains released to initial load of 5,000 pounds. Deflections: horizontal — 1.93 inch; vertical — .27 inch.

Strains again gradually applied. Maximum load sustained 62,800 pounds, rapid yielding beginning when the horizontal deflection reached — 4.55 inches.

Initial load of 5,000 pounds horizontal deflection — 2.02 inches; vertical — .29 inch.

Column rotated, bringing pins into horizontal position, concave side up. Counterweights removed.

	Pounds
With load of 500 pounds at middle, load sustained	51,500
With load of 500 pounds at middle removed, load sustained	57,600

Effect of 500 pounds at middle

Five hundred pounds when placed on middle of column caused deflection of .27 inch.

1121.—6-INCH CHANNELS. 8 inches apart.

Details same as 1095, except that end plates were 18" × ½".

Total length, c. to c. of pin holes, 25 feet.

Gauged length, 260 inches.

Total weight, 685 pounds.

		Sq. in
Upper channel bar, 25 feet 8 inches	201 pounds..	2.54
Lower channel bar, 25 feet 8 inches	202 pounds..	2.30
Sectional area		4.84

Counterweights at middle.

Required .03-inch packing at top of bolster, one end.

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0106	.0.	0.	
20,000	.0292	0.	0.	
30,000	.0477	-.01	0.	
40,000	.0670	-.02	0.	
50,000	.0867	-.05	0.	
5,000	.0007	0.	0.	
60,000	.1062	-.09	0.	
70,000	.1262	-.11	0.	
80,000	.1460	-.17	0.	
90,000	.1656	-.22	0.	
100,000	.1862	-.35	0.	
5,000	.0042	-.05	0.	
105,000	.1977	-.37	0.	
110,000	.2090	-.56	-.02	Ultimate strength = 23,350 pounds per square inch; deflection continued under the maximum load.
109,000		-.60	-.02	
Column yielded suddenly, increasing deflection to—				
65,000		-3.65	-.09	
5,000		-.60	-.12	
71,300		-3.65		Load sustained after above deflection.

	Pounds.
With pins horizontal, counterweights removed, and load at middle of 500 pounds, the load sustained was	55,500
With 500 pounds at middle removed	61,200
Increased resistance by removing the 500 pounds	5,700

When the 500 pounds was applied, it increased the deflection .42 inch at the middle of the column.

1122.—6-INCH CHANNELS. 8 inches apart.

Like 1121.

Total length, c. to c. of pin holes, 25 feet.

Gauged length, 260 inches.

Total weight, 652 pounds.

		Sq. in.
Upper channel bar, 25 feet 8 inches	196 pounds..	2.291
Lower channel bar, 25 feet 8 inches	200 pounds..	2.338
Sectional area		4.63

Counterweights at middle.

Pin holes not parallel $\begin{matrix} .18 \text{ inch.} \\ \times \\ .18 \text{ inch.} \end{matrix}$

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inches.	Inch.	
5,000				
10,000	.0105	0.	0.	
20,000	.0300	0.	0.	
30,000	.0490	.02	0.	
40,000	.0695	.05	0.	
50,000	.0905	.08	0.	
5,000	.0030	0.	0.	
60,000	.1114	.07	0.	
70,000	.1330	.10	— .02	
80,000	.1550	.16	— .03	
90,000	.1778	.22	— .05	
100,000	.2015	.33	— .07	
5,000	.0130	.02	— .07	
105,000	.2130	.25	— .08	
110,000	.2250	.32	— .09	
117,500		.65	— .10	Ultimate strength = 25,360 pounds per square inch.
		.70		This deflection reached, then suddenly sprung about 4 inches.
5,000		.78	— .08	
67,750		3.95	— .05	Load sustained, after above deflections.
5,000		.40	— .08	
Post rotated, bringing pins horizontal, counterweights removed. Loaded with 500 pounds at middle. This increased deflection .48 inch at middle.				
54,000				Load sustained with 500 pounds at middle.
58,700				Load sustained without 500 pounds at middle.
4,700				Increased sustaining power.

1123.—8-INCH CHANNELS. 8 inches apart.

Details same as 1110, except that end plates were $12'' \times \frac{1}{4}''$.

Total length, c. to c. of pin holes, 23 feet 4 inches.

Gauged length, 240 inches.

Total weight, 1,004 pounds.

Upper channel bar, 24 feet.....	342 pounds, .35-inch web...	84. in. 4.275
Lower channel bar, 24 feet.....	297 pounds, .28-inch web...	3.712

Sectional area 7.99

Counterweighted at middle.

Required .01 inch packing at one end, upper side.

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0039	0.	0.	
20,000	.0115	0.	+ .06	
30,000	.0209	0.	.07	
40,000	.0305	0.	.08	
50,000	.0399	0.	.08	
5,000	.0015	0.	0.	
60,000	.0505	0.	.08	
70,000	.0609	0.	.09	
80,000	.0735	0.	.10	
90,000	.0835	0.	.10	
100,000	.0940	0.	.10	
5,000	.0005	0.	0.	
110,000	.1040	0.	.10	
120,000	.1145	0.	.10	
130,000	.1249	0.	.10	

Rested one hour.

Loads.	Compression.	Deflections.		Remarks
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
140,000	.1359	0.	.10	
150,000	.1480	0.	.10	
5,000	.0005	0.	0.	
160,000	.1585	.02	.10	
170,000	.1710	.03	.10	
180,000	.1819	.04	.10	
190,000	.1939	.05	.10	
200,000	.2063	.05	.10	
5,000	.0043	0.	.03	
210,000	.2193	.06	.12	
220,000	.2320	.07	.12	
230,000	.2485	.09	.13	
240,000	.2665	.12	.14	
250,000	.2839	.16	.17	"Cooper lines" developed in vicinity of separator bolt holes.
5,000	.0250	.05	.10	
257,500		.45	.20	Ultimate strength—32,230 pounds per square inch.
Strain continued increasing the deflection; load on column falling to—				
240,000		1.00	.23	Column then suddenly deflected horizontally about 3.65 inches.
5,000		1.75	.26	
145,000				Load sustained, after above deflections.
5,000		1.85		
Column rotated, bringing pins into horizontal position; counterweights removed. Loaded at middle with 500 pounds, increasing deflection .14 inch.				
131,900	Sustained with 500 pounds at middle.			
136,200	Sustained without 500 pounds at middle.			
4,800 : Effect of 500 pounds at middle.				
Pin holes elongated about .02 inch each.				

1124.—8-INCH CHANNELS. 8 inches apart.

Like 1123.

Total length, c. to c. of pin holes, 23 feet 4 inches.

Gauged length, 240 inches.

Total weight, 977 pounds.

Upper channel bar, 24 feet	305 pounds, .30-inch web...	Sq. in. 3.812
Lower channel bar, 24 feet	309 pounds, .305-inch web...	3.862
Sectional-area		7.67

Counterweighted at middle.

.00½-inch packing used at one end; upper channel.

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0064	0.	0.	
20,000	.0190	0.	0.	
30,000	.0308	0.	0.	
40,000	.0430	0.	0.	
50,000	.0540	0.	0.	
5,000	.0005	0.	0.	
60,000	.0644	0.	0.	
70,000	.0765	0.	0.	
80,000	.0880	0.	0.	

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
90,000	.0995	0.	0.	
100,000	.1125	0.	0.	
5,000	.0010	0.	0.	
110,000	.1218	0.	0.	
120,000	.1335	0.	0.	
130,000	.1464	0.	0.	
140,000	.1575	0.	0.	
150,000	.1618	0.	0.	
5,000	.0040	0.	0.	
160,000	.1818	0.	0.	
170,000	.1940	0.	0.	
180,000	.2060	.02	0.	
190,000	.2200	.03	0.	
200,000	.2335	.05	0.	
5,000	.0130	0.	.01	
210,000	.2495	.05	0.	
220,000	.2680	.07	.04	
230,000	.2880	.10	.07	
240,600		.30	.10	Ultimate strength = 31,370 pounds per square inch.
Strains continued after passing the ultimate strength, the load running down to 234,000 pounds, when sudden bending occurred.				
234,000		.80		Sudden bending, increasing deflections to 3.60 inches horizontal and .45 inch vertical.
5,000		1.85	.35	
2,000				Rested over night.
139,700				Sustained after above deflections.
Column rotated, bringing pins into horizontal position, concave side up. Counterweights removed. Loaded at middle with 500 pounds, increasing deflection about .14 inch.				
123,000	Sustained with 500 pounds at middle.			
128,700	Sustained without 500 pounds at middle.			
5,700	Increased resistance.			

1229.—6-INCH CHANNELS. 8 inches apart.

Details of column same as 1095, except that end plates were 18 inches long, rivets 2 inches pitch, and two pin ends.

Total length, c. to c. of pin holes, 17 feet 6 inches.

Gauged length, 180 inches.

Total weight, 485 pounds.

Upper channel bar, 18 feet 2 inches, 139 pounds, .22-inch web.....	Sq. in. 2.286
Lower channel bar, 18 feet 2 inches, 143 pounds, .23-inch web.....	2.361

Sectional area..... 4.66

Counterweight at middle.

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000				
10,000	.0090	0.	0.	
20,000	.0252	0.	0.	
30,000	.0370	0.	0.	
40,000	.0492	0.	0.	
50,000	.0622	0.	0.	
5,000	.0002	— .01	0.	
60,000	.0747	0.	+ .01	
70,000	.0882	0.	.01	
80,000	.1022	0.	.01	
90,000	.1160	0.	.01	
100,000	.1300	0.	.01	

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000	.0016	— .01	.01	
105,000	.1372	+ .01	.03	
110,000	.1450	.01	.04	
115,000	.1522	.01	.04	
120,000	.1626	.01	.04	
125,000	.1712	.01	.04	
5,000	.0102	— .01	.06	Rested one hour.
130,000	.1822	+ .01	.04	
135,000	.1946	.01	.04	
140,000	.2087	.02	.04	
145,000	.2250	.04	.02	
150,000	.2442	.10	.01	
5,000	.0492	.05	.06	
152,600				Ultimate strength = 32,750 pounds per square inch.
		1.60		Sudden deflection to about 2.80 in.
5,000		1.50		Permanent deflection after sudden bending.
50,000		1.90		
87,800		2.87		Load sustained after permanent deflection of 1.50 inch.
5,000		1.57		
Column rotated till pins were horizontal, counterweights removed, and loaded at middle with 500 pounds. The effect of placing 500 pounds on column was to increase deflection at middle .13 inch.				
77,300	Sustained with load at middle of 500 pounds.			
82,300	Sustained without load at middle of 500 pounds.			
5,000	Effect of 500 pounds at middle.			
Permanent set increased about 1 inch more, then loaded again.				
62,850	Sustained with load at middle of 500 pounds.			
66,950	Sustained without load at middle of 500 pounds.			
4,100	Effect of load at middle of 500 pounds.			

1230.—6-INCH CHANNELS. 8 inches apart.

Like 1229.

Total length, c. to c. of pin holes, 17 feet 6 inches.

Total weight, 490 pounds.

Gauged length, 180 inches.

	Sq. in.
Upper channel bar, 18 feet 2 inches, 143 pounds, .22-inch web	2.361
Lower channel bar, 18 feet 2 inches, 144 pounds, .23-inch web	2.378
Sectional area	4.74

Packing used behind upper channel at one end .00½ inch, lower channel at other end .08 inch.

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0056	0.	0.	
20,000	.0162	0.	0.	
30,000	.0292	0.	.01	
40,000	.0417	0.	.01	
50,000	.0547	0.	.02	
5,000	+ .0018	0.	0.	
60,000	.0682	0.	.04	
70,000	.0817	0.	.04	
80,000	.0957	0.	.04	

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
90,000	.1102	— .01	.05	
100,000	.1232	— .02	.05	
5,000	+ .0004	0.	0.	
105,000	.1312	— .01	.05	
110,000	.1380	— .03	.05	
115,000	.1452	— .04	.05	
120,000	.1542	— .05	.05	
125,000	.1637	— .06	.05	
5,000	.0057	0.	0.	
130,000	.1752	— .06	.05	
135,000	.1850	— .07	.04	
140,000	.1962	— .11	.03	
145,000	.2102	— .21	.02	
147,500		— .45		Ultimate strength = 31,120 pounds per square inch.
5,000		— .30		
Pins brought horizontal and loaded at middle as before.				
122,000	Deflected rapidly while carrying 500 pounds at middle.			
91,100	Sustained with 500 pounds at middle.			
94,500	Sustained without 500 pounds at middle.			
3,400	Effect of 500 pounds at middle.			
Permanent	deflection increased about .85 inch.			
70,300	Sustained with 500 pounds at middle.			
74,200	Sustained without 500 pounds at middle.			
3,900	Effect of 500 pounds at middle.			
Permanent	deflection 2.61 inches.			
Permanent	deflection increased to 3.61 inches.			
58,500	Sustained with 500 pounds at middle.			
59,500	Sustained without 500 pounds at middle.			
3,000	Effect of 500 pounds at middle.			
Pin holes not elongated. Eye plates slipped about .01 inch each. One plate was slipped .04 inch. These plates secured to the web of the channels by four $\frac{3}{4}$ -inch rivets each.				

1231.—6-INCH CHANNELS. 8 inches apart.

Details same as 1095, except this column had two pin ends.

Total length, c. to c. of pin holes, 15 feet.

Gauged length, 150 inches.

Total weight, 412 pounds.

	Sq. in.
Upper channel, 15 feet 8 inches, 117 pounds, .20-inch web.....	2.241
Lower channel, 15 feet 8 inches, 117 pounds, .20-inch web.....	2.241
Sectional area.....	4.48

.02-inch packing used at one end.

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000				
10,000	.0035	0.	0.	
20,000	.0105	0.	+ .03	
20,000	.0169	0.	.06	
40,000	.0250	— .01	.10	
50,000	.0355	— .02	.10	
5,000	+ .0005	0.	0.	
60,000	.0495	— .03	.10	
70,000	.0610	— .04	.10	
80,000	.0705	— .05	.10	
90,000	.0795	— .05	.10	

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
100,000	.0929	— .06	.10	
5,000	.0035	0.	0.	
110,000	.1093	— .06	.10	
120,000	.1265	— .07	.10	
125,000	.1345	— .08	.10	
5,000	.0453	— .01	.03	
130,000	.1740	— .08	.10	
135,000	.1843	— .09	.10	
140,000	.1939	— .10	.10	
145,000	.2080	— .11	.10	
150,000	.2260	— .25	.10	
151,500		— .55		Ultimate strength=33,820 pounds
		— .60		per square inch.
5,000		— .38		
Pins brought into horizontal position and column loaded at middle.				
129,100		Sustained with 500 pounds at middle.		
133,200		Sustained without 500 pounds at middle.		
4,100		Effect of 500 pounds at middle.		
Permanent		deflection increased 1.05 inch further.		
84,900		Sustained with 500 pounds at middle.		
88,300		Sustained without 500 pounds at middle.		
3,400		Effect of 500 pounds at middle.		
Eye plates slipped along web of channels from .03 to .05 inch. Pin holes elongated about .02 inch each.				

1232.—6-INCH CHANNELS. 8 inches apart.

Like 1231.

Total length, c. to c. of pin holes, 15 feet.

Gauged length, 150 inches.

Total weight, 425 pounds.

	Sq. in.
Upper channel, 15 feet 8 inches, 121 pounds, 23-inch web.....	2.317
Lower channel, 15 feet 8 inches, 117 pounds, 20-inch web.....	2.241
Sectional area.....	4.56

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000				
10,000	.0069	0.	— .01	
20,000	.0189	0.	— .02	
30,000	.0305	0.	— .03	
40,000	.0419	0.	— .03	
50,000	.0530	.01	— .03	
5,000	.0005	0.	— .01	
60,000	.0643	.02	— .03	
70,000	.0765	— .03	— .03	
80,000	.0880	— .03	— .03	
90,000	.1000	— .04	— .03	
100,000	.1125	— .05	— .03	
5,000	.0050	0.	— .01	
110,000	.1250	— .05	— .03	
120,000	.1395	— .06	— .04	
125,000	.1473	— .06	— .05	
5,000	.0133	0.	— .02	
130,000	.1555	— .07	— .04	
135,000	.1639	— .08	— .05	
140,000	.1720	— .10	— .05	
145,000	.1825	— .11	— .04	
150,000	.1935	— .15	— .04	

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000	.0335	— .08	— .02	Ultimate strength=34,540 pounds per square inch.
157,500	.....	— .60	.....
5,000	.....	— .44	.....
Pins brought horizontal, concave side up, and counterweights removed.				
133,800	Sustained with 500 pounds at middle.			
138,200	Sustained without 500 pounds at middle.			
4,400	Effect of 500 pounds at middle.			
Permanent	deflection increased about 1.2 inch.			
96,000	Sustained with 500 pounds at middle.			
99,800	Sustained without 500 pounds at middle.			
3,800	Effect of 500 pounds at middle.			
Permanent	deflection increased 1.2 inch, or about 2.8 inches total.			
78,300	Sustained with 500 pounds at middle.			
81,600	Sustained without 500 pounds at middle.			
3,300	Effect of 500 pounds at middle.			
Eye plates while under strain of 150,000 pounds slipped along web of channels from .04 inch to .06 inch. When the load was released to zero the permanent slip was found to be from .02 inch to .04 inch.				
Elongation of pin holes in web of channel about .03 inch to .04 inch.				

1.—6-INCH CHANNELS × 8 inches apart.

Details of column same as 1095, except this column had two pin ends, and the end plates were 15 inch × $\frac{1}{4}$ inch. Rivets 3-inch pitch, as before.

Total length, c. to c. of pin holes, 12 feet 6 inches.

Gauged length, 120 inches.

Total weight, 375 pounds.

Upper channel bar, 13 feet 2 inches, 98 pounds, .20-inch web	Sq. in.	
Lower channel bar, 13 feet 2 inches, 102 pounds, .23-inch web		2.233
		<u>2.324</u>

Sectional area 4.56

Packing used at one end, .02 inch.

Load applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000	.....	.....	.....
10,000	.0053	0.	0.	
20,000	.0155	0.	0.	
30,000	.0275	0.	0.	
40,000	.0405	0.	0.	
50,000	.0499	0.	0.	
5,000	.0023	0.	0.	
60,000	.0593	0.	0.	
70,000	.0680	— .01	0.	
80,000	.0775	— .01	0.	
90,000	.0869	— .01	0.	
100,000	.0963	— .03	0.	
5,000	.0035	0.	0.	
110,000	.1059	— .01	0.	
120,000	.1163	— .01	0.	
125,000	.1219	— .01	0.	
5,000	.0093	0.	0.	
130,000	.1273	— .01	+ .01	
135,000	.1335	— .01	+ .01	
140,000	.1403	0.	+ .01	
145,000	.1489	0.	+ .02	
150,000	.1589	— .02	.01	

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000	.0290	— .01	— .02	
155,000	.1730	— .03	+ .03	
160,000	.1915	— .07	.08	
163,600	.....	— .20	.....	Ultimate strength = 35,880 pounds per square inch.
5,000	.....	— .35	.....
Column rotated, bringing pins horizontal, concave side up. Loads sustained.				
142,600 loaded at middle with 500 pounds.				
146,700 load at middle removed.				
4,100 effect.				
Column deflected perpendicular to plane of pins. Channel bars buckled between latticing. Pin holes elongated about .02 inch. Eye plates slipped from .03 inch to .05 inch each.				

2.—6-INCH CHANNELS \times 8 inches apart.

Like 1.

Total length, c. to c. of pin holes, 12 feet 6 inches.

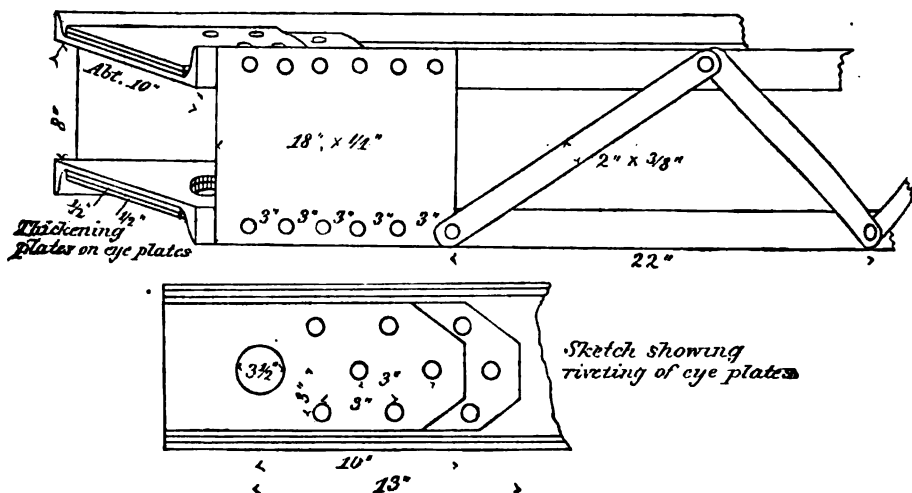
Total weight, 375 pounds.

Gauged length, 120 inches.

	Sq. in.
Upper channel, 13 feet 2 inches, 105 pounds, .22-inch web	2.392
Lower channel, 13 feet 2 inches, 103 pounds, .21-inch web	2.347
Sectional area	4.74

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000	.....	.....	.....
10,000	.0082	0.	0.	
20,000	.0227	0.	— .02	
30,000	.0312	0.	— .02	
40,000	.0392	0.	— .02	
50,000	.0480	0.	— .02	
5,000	.0007	0.	0.	
60,000	.0567	0.	— .03	
70,000	.0652	0.	— .02	
80,000	.0750	0.	— .02	
90,000	.0842	0.	— .02	
100,000	.0942	0.	— .02	
5,000	.0047	0.	0.	
110,000	.1050	0.	— .02	
120,000	.1162	+ .01	— .02	
125,000	.1227	.02	— .02	
5,000	.0142	0.	— .02	
130,000	.1292	.02	— .02	
135,000	.1357	.02	— .02	
140,000	.1437	.02	— .02	
145,000	.1546	.07	— .03	
150,000	.1742	.20	0.	
153,500	.....	.30	.....	Ultimate strength = 32,380 pounds per square inch.
Column failed by horizontal deflection, and apparently with simultaneous buckling of the channels between the latticing.				
Eye plates slipped from .02 inch to .03 inch each.				
Pin holes in webs of channels elongated about .02 inch each.				

3.



Total length, c. to c. of pin holes, 20 feet 10 inches.

Gauged length, 200 inches.

Total weight, 1,065 pounds.

Upper channel, 21 feet 6 inches, 344 pounds, .32-inch web	Sq. in. 4.800
Lower channel, 21 feet 6 inches, 354 pounds, .35-inch web	4.939

Sectional area	9.74
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.05-inch packing used at each end.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0045	0.	0.	
20,000	.0120	0.	.02	
50,000	.0389	— 01	— .07	
80,000	.0580	— 01	— .07	
100,000	.0729	— 01	— .07	
5,000	.0003	0.	0.	
120,000	.0873	— 01	— .07	
140,000	.1019	— 01	— .07	
150,000	.1095	— 01	— .07	
5,000	.0005	0.	0.	
170,000	.1245	— 01	— .07	
190,000	.1400	— 01	— .07	
200,000	.1479	— 01	— .08	
5,000	.0019	0.	0.	
210,000	.1559	— 01	— .09	
222,000	.1639	— 01	— .09	
230,000	.1713	— 01	— .10	
240,000	.1795	— 01	— .10	
250,000	.1879	— 01	— .10	
5,000	.0055	0.	0.	
260,000	.1965	0.	— .10	
270,000	.2055	0.	— .10	
280,000	.2159	0.	— .11	
290,000	.2270	0.	— .12	
290,000	.2290			
300,000			— .13	After 3 m. rest.
310,000		+ .02	— .15	
320,000		+ .02	— .20	
330,000			— .40	Ultimate strength = 33,880 pounds per square inch.

Column failed by buckling channels between the latticing, giving a general direction to the deflection downward or perpendicular to webs of channel bars.

Scale on iron started very generally; in the most marked degree, however, in the vicinity of middle "separator" bolt holes.

Pin holes in webs elongated .01 to .03-inch. Eye plates slipped along web of channels from .03 to .06 inch.

4.—10-INCH CHANNELS \times 8 inches apart.

Like 3.

Total length, c. to c., pin holes, 20 feet 10 inches.

Gauged length, 200 inches.

Total weight, 1,076 pounds.

	Sq. in.
Upper channel bar, 21 feet 6 inches, 355 pounds, .35-inch web.....	4.953
Lower channel bar, 21 feet 6 inches, 355 pounds, .34-inch web.....	4.853
Sectional area.....	9.806

.06-inch packing used at one end.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000			— .01	
10,000	.0050	0.	0.	
50,000	.0307	0.	0.	
80,000	.0522	0.	0.	
100,000	.0662	0.	0.	
5,000	.0012	0.	0.	
120,000	.0797	0.	0.	
140,000	.0942	0.	0.	
150,000	.1012	0.	0.	
5,000	.0012	0.	0.	
170,000	.1152	0.	0.	
190,000	.1297	0.	0.	
200,000	.1372	0.	0.	
5,000	.0007	0.	0.	
210,000	.1442	0.	0.	
220,000	.1522	0.	0.	
230,000	.1592	+ .01	+ .01	
240,000	.1672	.02	.02	
250,000	.1753	.02	.02	
5,000	.0080	0.	.02	
260,000	.1842	.02	.02	
270,000	.1917	.02	.02	
280,000	.2026	.04	.04	
290,000	.2132	.05	.05	
300,000	.....	.06	.06	
310,000	.....	.08	.08	
320,000	.....	.10	.10	
330,100	.....	.30	.20	Ultimate strength = 33,660 pounds per square inch.

Column failed by deflecting diagonally.

Scale very generally disturbed.

Eye plates slipped from .03 to .06 inch at each end.

Elongation of eyes in web of channel bars from .01 to .03 inch.

5.—10 INCH CHANNELS \times 8 inches apart.

Details same as 3, except end plates were $15'' \times \frac{1}{4}''$.

Total length, c. to c. pin holes, 25 feet.

Gauged length, 250 inches.

Total weight, 1,280 pounds.

	Sq. in.
Upper channel bar, 25 feet 8 inches, 433 pounds, .35-inch web.....	5.061
Lower channel bar, 25 feet 8 inches, 426 pounds, .345-inch web.....	4.979
Sectional area.....	10.040

.04-inch packing used at each end.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0035	0.	0.	
50,000	.0358	0.	+ .02	
80,000	.0635	0.	+ .03	
100,000	.0870	0.	+ .03	
5,000	0.	0.	0.	
120,000	.0985	— .01	.03	
140,000	.1160	— .02	.03	
150,000	.1250	— .02	.03	
5,000	.0005	0.	0.	
170,000	.1430	— .02	.03	
190,000	.1615	— .02	.03	
200,000	.1704	— .02	.03	
5,000	.0008	0.	0.	
210,000	.1798	— .02	.03	
220,000	.1888	— .02	.03	
230,000	.1985	— .03	.03	
240,000	.2075	— .03	.03	
250,000	.2175	— .04	+ .02	
5,000	.0035	0.	0.	
260,000	.2285	— .04	.02	
270,000	.2385	— .04	.02	
280,000	.2510	— .02	.01	Scale starts off metal.
290,000	.2624	— .03	.01	
300,000	.2754	— .03	0.	
5,000	.0165	0.	0.	
320,000		— .05	0.	
330,000		— .05	— .05	
342,700		— .17	— .30	
5,000		— .10	— .31	Ultimate strength = 34,130 pounds per square inch.

Column rotated, bringing pins horizontal, concave side up.

Counterweights removed and transverse load of 500 pounds put on at middle.

Load sustained 310,000 with 500 pounds at middle.

Suddenly yielded, increasing the permanent deflection to 1.75 inches in plane of pins. Sustaining power now 214,000 pounds (not counter-weighted or loaded transversely). At time of maximum load the metal of the channel bars had scaled very generally, the column failing by deflection and by local yielding of channels. Eye plates slipped; maximum, .11 inch; minimum, .01 inch.

6.—10-INCH CHANNELS \times 8 inches apart.

Like 5.

Total length, c. to c., pin holes, 25 feet.

Gauged length, 250 inches.

Total weight, 1,280 pounds.

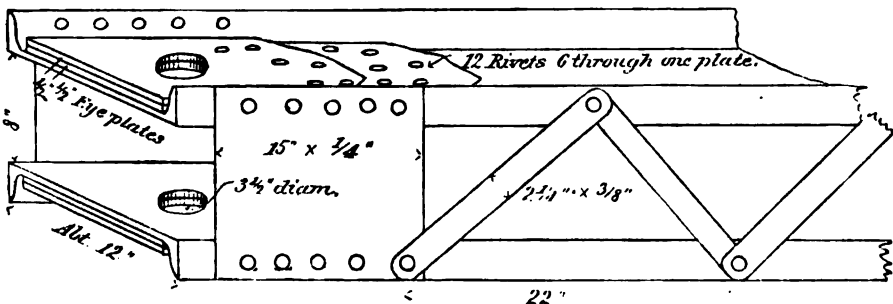
Upper channel bar, 25 feet 8 inches, 431 pounds, .34-inch web.....	Sq. in. 5.037
Lower channel bar, 25 feet 8 inches, 425 pounds, .34-inch web.....	4.969
Sectional area.....	10.00

Loads ap- plied.	Compres- sion.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0062	0.	.02	
50,000	.0547	0.	.17	
100,000	.1052	-.01	.20	
5,000	.0017	0.	.01	
120,000	.1212	+.01	.21	
140,000	.1396	+.01	.22	
150,000	.1602	.02	.23	
5,000	.0032	0.	.02	
170,000	.1677	.04	.24	
180,000	.1882	.04	.25	
200,000	.1972	.04	.25	
5,000	.0057	0.	.05	
210,000	.2062	.04	.25	
220,000	.2157	.05	.26	
230,000	.2257	.05	.27	
240,000	.2360	.05	.27	
250,000	.2466	.06	.28	
5,000	.0137	0.	.09	
260,000	.2577	.08	.29	
270,000	.2702	.10	.30	
280,000	.2822	.10	.30	
290,000	.2986	.10	.30	
300,000		.13	.32	
310,000		.16	.35	
319,300		.40	.47	Ultimate strength = 31,930 pounds per square inch.
5,000		.24	.36	Sustained after above deflection.
316,000				Column rotated, bringing pins horizontal, concave side up.
5,000		.34	-.40	Counterweights removed.
297,300				Strain sustained, then rapidly deflected downward.
316,000 - 297,300 = 18,700 pounds loss in sustaining power, due to removal of coun- terweights at middle and allowing weight of column to act as a transverse load.				

After strain reached 297,300 and rapid deflection took place, the pressure was immediately released, returning to zero. Loads were then gradually applied, and the sustaining power of the column determined to be 211,000 pounds, showing a sudden reduction in strength of 86,300 pounds.

Column failed by deflection and by buckling channel bars between latticing.

7.—12-INCH CHANNELS \times 8 inches apart.



Total length, c. to c., pin holes, 25 feet.

Gauged length, 250 inches.

Total weight, 1,547 pounds.

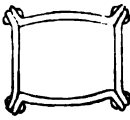
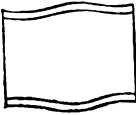
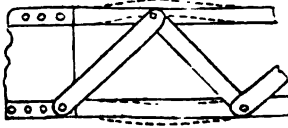
Upper channel, 25 feet 8 inches, 523 pounds, .33-inch web	Sq. in. 6.113
Lower channel, 25 feet 8 inches, 516 pounds, .33-inch web	6.031

Sectional area 12.144

.02-inch packing used at one end.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0050	0.	-.01	
50,000	.0372	0.	-.06	
80,000	.0625	0.	-.06	
100,000	.0755	0.	-.06	
5,000	.0015	0.	0.	
120,000	.0895	0.	-.06	
150,000	.1114	0.	-.00	
180,000	.1334	0.	-.06	
200,000	.1480	.01	-.06	
5,000	.0010	0.	0.	
230,000	.1625	.02	-.05	
250,000	.1850	.03	-.05	
260,000	.1930	.04	-.04	
270,000	.2008	.04	-.04	
280,000	.2085	.04	-.04	
290,000	.2168	.04	-.03	
300,000	.2254	.05	-.03	
5,000	.0075	0.	0.	
310,000	.2345	.06	-.03	
320,000	.2440	.07	-.03	
330,000	.2535	.07	-.03	
340,000	.2660	.08	-.03	
350,000	.2780	.10	-.03	
5,000	.0230	0.	0.	
360,000	.2894	.11	-.03	
370,000	.3054	.13	-.03	
380,000	.3185	.15	-.04	
390,000	.3398	.19	-.05	
400,000				Ultimate strength = 32,940 pounds per square inch.

This load sustained momentarily, then rapidly failed at end, 22 inches from center of pin hole, by buckling the channel bars, the webs bending outward.

This buckling took place 5 inches from a separator, but the weakness did not appear to be affected by the separator bolt holes. The scale was started at many places on each channel bar in lines at right angles to axis of column. These lines occurred both opposite the riveting of the lattice bars and between the riveting. Eye plates slipped about .05 inch. Pin holes in webs elongated .08 inch.

8.—12-INCH CHANNELS. 8 inches apart.

Duplicate of column No. 7.

Total length, c. to c., pin holes, 25 feet.

Gauged length, 250 inches.

Total weight, 1,522 pounds.

Upper channel bar, 25 feet 8 inches, 508 pounds, .31-inch web Sq. in. 5.937
 Lower channel bar, 25 feet 8 inches, 511 pounds, .33-inch web 5.972

Sectional area 11.91

.03-inch packing used at one end.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000				
10,000	.0045	0.	0.	
50,000	.0365	0.	— .08	
80,000	.0580	0.	— .03	
100,000	.0724	— .01	— .02	
5,000	0.	0.	0.	
120,000	.0875	— .01	— .02	
150,000	.1100	— .01	— .02	
180,000	.1324	— .01	— .02	
200,000	.1474	— .01	— .02	
5,000	0.	0.	0.	
220,000	.1708	— .01	— .02	
250,000	.1850	— .01	— .02	
280,000	.1928	— .01	— .02	
270,000	.2008	— .01	— .02	
280,000	.2094	— .01	— .02	
290,000	.2184	— .01	— .02	
300,000	.2270	— .01	— .02	
5,000	.0040	0.	— .01	
310,000	.2370	— .01	— .02	
320,000	.2460	— .01	— .02	
330,000	.2555	— .01	— .02	
340,000	.2670	— .01	— .02	
350,000	.2788	— .02	0.	
5,000	.0180	0.	.04	
360,000	.2920	0.	— .02	
370,000	.3070	0.	— .02	
380,000	.3210	— .03	— .01	
390,000	.3390	.04	— .03	
400,000		.05	— .05	
407,800				Ultimate strength = 34,240 pounds per square inch.

Column failed same as 7.

Eye plates slipped about .05 inch.

9.—12-INCH CHANNELS. 8 inches apart.

Details same as 7, except end plates were $18'' \times \frac{1}{4}''$.

Total length, c. to c. of pin holes, 20 feet.

Gauged length, 200 inches.

Total weight, 1,262 pounds.

Upper channel bar, 20 feet 4 inches, 413 pounds, .32-inch web Sq. in. 5.995
 Lower channel bar, 20 feet 8 inches, 412 pounds, .32-inch web 5.980

Sectional area 11.98

.02-inch packing used at each end.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000				
10,000	.0024	0.	0.	
50,000	.0241	0.	0.	
100,000	.0511	0.	0.	
5,000	0.	0.	0.	

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
150,000	.0786	— .01	0.	
200,000	.1066	— .01	0.	
5,000	.0001	0.	0.	
230,000	.1224	— .01	0.	
250,000	.1334	— .01	.01	
280,000	.1390	— .01	.02	
270,000	.1446	— .02	.02	
280,000	.1504	— .02	.02	
290,000	.1566	— .02	.02	
300,000	.1616	— .02	.02	
5,000	.0026	0.	0.	
310,000	.1656	— .03	.02	
320,000	.1714	— .03	.02	
330,000	.1771	— .03	.02	
340,000	.1829	— .03	.03	
350,000	.1840	— .03	.03	
5,000	.0090	0.	0.	
360,000	.1896	— .03	.03	
370,000	.2096	— .03	.03	
380,000	.2196	— .03	.03	
390,000	.2310	— .01	.04	
400,000		— .01	.04	
410,000		— .01	.04	
411,600				Ultimate strength = 34,360 pounds per square inch.

Column failed near the end by buckling the webs of the channels 24 inches from c. of pin holes and 9 inches from end plates. Failure similar to 7. Column rotated, bringing pins horizontal and counterweights removed. In this position the column sustained 390,000 pounds, and then continued to buckle the channel bars without producing flexure.

10.—12-INCH CHANNELS. 8 inches apart.

Like 9.

Total length, c. to c. of pin holes, 20 feet.

Gauged length, 200 inches.

Total weight, 1,287 pounds.

Upper channel bar, 20 feet 8 inches, 420 pounds, .33-inch web	Sq. in. 6.097
Lower channel bar, 20 feet 8 inches, 430 pounds, .34-inch web	6.242

Sectional area 12.34

.003-inch packing used at one end.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000				
10,000	.0041	0.	0.	
50,000	.0316	0.	— .03	
100,000	.0621	0.	— .05	
5,000	.0010	0.	0.	
150,000	.0910	0.	— .05	
200,000	.1196	0.	— .06	
5,000	.0016	0.	0.	
230,000	.1376	0.	— .07	
250,000	.1494	0.	— .08	
280,000	.1680	0.	— .09	
300,000	.1810	0.	— .10	

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000	.0071	0.	— .01	
310,000	.1881	0.	— 10	
320,000	.1951	0.	— 10	
330,000	.2021	0.	— 10	
340,000	.2096	0.	— 11	
350,000	.2174	0.	— 11	
5,000	.0150	0.	— .03	
360,000	.2254	0.	— 13	
370,000	.2360	0.	— 13	
380,000	.2461	0.	— 14	
390,000	.2611	0.	— 14	
400,000	.....	0.	— 15	
410,000	.....	0.	— 20	
414,800	.....	.....	.....	Ultimate strength = 33,610 pounds per square inch.

Failed 20 inches from pin hole, similar to 7. Web of channels buckled, no flexure of column taking place.

11.—10-INCH CHANNELS. 8 inches apart.

Details same as 3, except end plates were $15'' \times \frac{1}{4}''$.

Total length, c. to c. of pin holes, 16 feet 8 inches.

Gauged length, 150 inches.

Total weight, 885 pounds.

	Sq. in.
Upper channel bar, 17 feet 4 inches, 276 pounds, .34-inch web	4.777
Lower channel bar, 17 feet 4 inches, 276 pounds, .33-inch web	4.777
Sectional area	9.55

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000	.0011	0.	0.	
10,000	.0226	0.	.01	
50,000	.0390	.01	.02	
80,000	.0496	.01	.02	
100,000	.0004	0.	0.	
5,000	.0601	.02	.03	
120,000	.0760	.03	.04	
150,000	.0928	.04	.04	
180,000	.1041	.04	.05	
200,000	.0004	0.	0.	
5,000	.1154	.04	.05	
120,000	.1276	.05	.05	
150,000	.1340	.05	.05	
180,000	.1401	.05	.05	
200,000	.1471	.05	.05	
220,000	.1546	.06	.05	
240,000	.1631	.07	.05	
260,000	.1730	.10	.06	
280,000	.0120	.05	.05	
300,000	.....	.12	.07	
310,000	.....	.20	.12	
320,000	.....	.....	.....	Ultimate strength = 33,840 pounds per square inch.

Column failed by buckling between the lattice bars very generally. The strains were maintained at 320,000 pounds about 3 minutes, when lateral deflection took place.

12.

Like 11.

Total length, c. to c., pin holes, 16 feet 8 inches.

Gauged length, 150 inches.

Total weight, 888 pounds.

	Sq. in.
Upper channel bar, 17 feet 4 inches, 278 pounds, .33-inch web.....	4.811
Lower channel bar, 17 feet 4 inches, 277 pounds, .34-inch web.....	4.794
Sectional area.....	9.61

.02-inch packing used at each end.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000		0.	0.	
10,000	.0033	—	—	
50,000	.0279	— .01	— .02	
100,000	.0575	— .03	— .05	
150,000	.0009	— .01	0.	
200,000	.0855	— .04	— .06	
220,000	.1125	— .05	— .06	
230,000	.0013	— .01	0.	
240,000	.1235	— .06	— .05	
250,000	.1298	— .06	— .06	
260,000	.1350	— .06	— .06	
270,000	.1419	— .07	— .06	
280,000	.1485	— .07	— .07	
290,000	.1565	— .07	— .07	
300,000	.1650	— .08	— .08	
310,000	.1949	— .09	— .09	
320,000		— .10	— .10	
328,700		— .24	— .26	Ultimate strength=84,000 pounds per square inch.

Column failed similarly to 11, by buckling channels between latticing. The elastic limit of the metal having been reached, the channels yielded throughout, the scale starting off at right angles to the axis of the column. Time of test, three-fourths hour.

13.—10-INCH CHANNELS. 8 inches apart.

Details same as 3, except end plates are 12" long \times $\frac{1}{4}$ ".

Total length, c. to c. of pin holes, 12 feet 6 inches.

Gauged length, 100 inches.

	Sq. in.
Upper channel bar, 13 feet 2 inches, 213 pounds, .34-inch web.....	4.853
Lower channel bar, 13 feet 2 inches, 212 pounds, .33+ inch web.....	4.800
Sectional area.....	9.65

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000		0.	0.	
10,000	.0021	—	—	
50,000	.0271	— .02	— .06	
100,000	.0416	— .02	— .07	
150,000	.0596	— .02	— .07	

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
200,000	.0781	— .02	— .07	
5,000	.0010	0.	— .02	
220,000	.0856	0.	— .06	
240,000	.0934	0.	— .06	
250,000	.0971	0.	— .06	
260,000	.1016	0.	— .06	
270,000	.1056	0.	— .06	
280,000	.1104	0.	— .06	
290,000	.1160	0.	— .06	
300,000	.1216	0.	— .06	
5,000	.0106	0.	— .05	
344,100				Ultimate strength=35,550 pounds per square inch.

After passing the elastic limit of the metal the column gradually failed by direct compression without flexure or perceptible buckling of the parts. Strains were continued after the ultimate load had been reached. Load which the column would sustain was gradually reduced to 341,000 pounds when rapid buckling of web of channel near middle of post began. Test then discontinued. Time of test, three-fourths hour.

14.—10-INCH CHANNELS. 8 inches apart.

Like 13.

Total length, c. to c., pin holes, 12 feet 6 inches.

Gauged length, 100 inches.

Total weight, 705 pounds.

Upper channel bar, 13 feet 2 inches, 210 pounds, .33-inch web	Sq. in.
Lower channel bar, 13 feet 2 inches, 211 pounds, .33+ inch web	4.785
	4.806

Sectional area 9.59

.03-inch packing used at one end.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000				
10,000	.0045	0.	0.	
50,000	.0255	0.	— .02	
100,000	.0430	0.	— .02	
150,000	.0618	0.	— .03	
200,000	.0808	0.	— .03	
5,000	.0010	0.	0.	
220,000	.0924	0.	— .03	
240,000	.0945	0.	— .03	
250,000	.0984	0.	— .03	
5,000	.0030	0.	0.	
260,000	.1024	0.	— .03	
270,000	.1065	0.	— .03	
280,000	.1110	0.	— .03	
290,000	.1164	0.	— .03	
300,000	.1200	0.	— .03	
5,000	.0104	0.	0.	
310,000	.1280	0.	0.	
320,000	.1330	0.	0.	
330,000	.1430	.03	.06	
390,000				Ultimate strength=35,350 pounds per square inch.

Webs of columns buckled 15 inches to 18 inches from end. Time of test, one hour.

15.—12-INCH CHANNELS. 8 inches apart.

Details same as 7.

Total length, c. to c., pin holes, 15 feet.

Gauged length, 130 inches.

Total weight, 985 pounds.

	Sq. in.
Upper channel bar, 15 feet 8 inches, 318 pounds, .32-inch web.....	6.09
Lower channel bar, 15 feet 8 inches, 315 pounds, .32-inch web.....	6.03
Sectional area	12.12

.05-inch packing used behind one end.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0006	0.	.01	
50,000	.0116	0.	.05	
100,000	.0306	0.	.05	
150,000	.0496	0.	.05	
200,000	.0691	0.	.05	
5,000	.0010	0.	.01	
250,000	.0886	0.	.05	
300,000	.1086	0.	.05	
320,000	.1170	0.	.05	
340,000	.1264	0.	.05	
350,000	.1314	0.	.05	
5,000	.0064	0.	.04	
360,000	.1370	0.	.05	
370,000	.1436	0.	.05	
380,000	.1506	0.	.05	
390,000	.1560	0.	.05	
400,000	.1670	0.	.03	
410,000				Ultimate strength = 23,630 pounds per square inch.

Ultimate load sustained momentarily. Then the column yielded rapidly by buckling the upper channel bar immediately at the end of the eye plates and at the bolt holes of the cast-iron separator. Web of the lower channel bar buckled outward at a point 32 inches from c. of pin hole opposite the latticing on one edge, and midway of the latticing on the other edge.

Time of test, one hour.

16.—12-INCH CHANNELS. 8 inches apart.

Like 15.

Total length, c. to c. of pin holes, 15 feet.

Gauged length, 130 inches.

Total weight, 1,035 pounds.

	Sq. in.
Upper channel bar, 15 feet 8 inches, 323 pounds, .34-inch web	6.18
Lower channel bar, 15 feet 8 inches, 328 pounds, .33-inch web	6.21
Sectional area	12.47

.06-inch packing used behind one end.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000	.....	.....	.....
10,000	.0025	0.	0.	
50,000	.0180	0.	0.	
100,000	.0358	0.	0.	
150,000	.0535	0.	0.	
200,000	.0719	0.	0.	
5,000	0.	0.	0.	
250,000	.0915	0.	0.	
300,000	.1110	0.	0.	
320,000	.0935 (?)	0.	0.	
340,000	.1280 (?)	0.	0.	
350,000	.1306	0.	0.	
5,000	.0050	0.	0.	
350,000	.1323	0.	.04	
5,000	.0069	0.	0.	
350,000	.1358	0.	.05	
360,000	.1399	0.	.05	
370,000	.1439	0.	.05	
380,000	.1494	0.	.05	
390,000	.1558	0.	.05	
400,000	.1628	0.	.05	
442,600	.....	.....	.....	Ultimate strength, 35,490 pounds per square inch.

Channels buckled in web at end of eye plates in upper channel, and 7 inches from eye plates in lower channel.
Time of test, one hour.

17.—12-INCH CHANNELS. 8 inches apart.

Like 1109.

Total length, c. to c. of pin holes, 10 feet.
Gauged length, 70 inches.
Total weight, 736 pounds.

	Sq. in.
Upper channel bar, 10 feet 8 inches, 216 pounds, .32-inch web	6.074
Lower channel bar, 10 feet 8 inches, 213 pounds, .33—inch web	5.990
Sectional area	12.06

.05-inch packing used at one end, .01½ inch at other end.

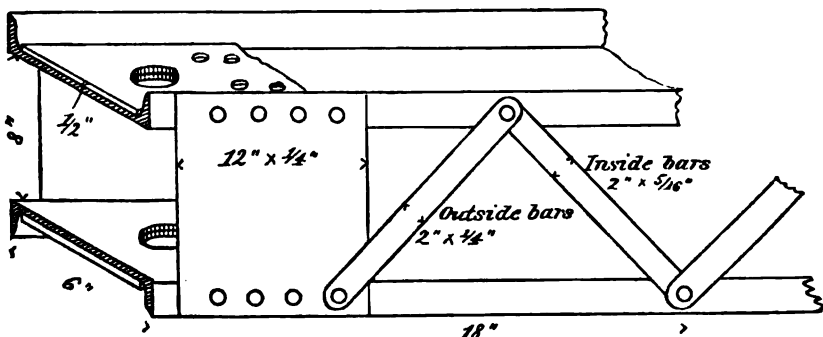
Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000	.....	.....	.....
10,000	.0008	0.	0.	
50,000	.0100	0.	— .01	
100,000	.0200	0.	— .01	
150,000	.0300	0.	— .01	
200,000	.0398	0.	— .01	
5,000	.0005	0.	0.	
250,000	.0500	0.	0.	
300,000	.0605	0.	0.	
5,000	.0015	0.	0.	
320,000	.0650	0.	0.	
340,000	.0698	0.	0.	
350,000	.0724	0.	0.	
360,000	.0754	0.	0.	
370,000	.0778	0.	0.	

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
380,000	.0810	0.	0.	
390,000	.0844	0.	0.	
400,000	.0874	0.	0.	
5,000	.0085	0.	0.	
423,000	-----	-----	-----	Ultimate strength, 35,070 pounds per square inch.

Failed like 16, by buckling web of channels just beyond end of eye plates and at bolt holes of separator.

Time of test, one hour.

18.—6 INCH CHANNELS. 8 inches apart.



Total length, c. to c. of pin holes, 30 feet.

Gauged length, 320 inches.

Total weight, 790 pounds.

	Sq. in.
Upper channel bar, 30 feet 8 inches, 242 pounds, .22-inch web	2.367
Lower channel bar, 30 feet 8 inches, 239 pounds, .22-inch web	2.339

Sectional area 4.7

.09 inch packing used at one end, .11 inch packing at other end.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000	-----	-----	-----	
10,000	.0081	.02	.03	
20,000	.0341	.04	.03	
30,000	.564	.08	.03	
40,000	.0408	.14	.03	
45,000	.0916	.18	.04	
50,000	.1031	.22	.04	
5,000	.0019	0.	0.	
50,000	.1031	.20	.04	
55,000	.1141	.25	.04	
60,000	.1261	.34	.04	
65,000	.1386	.50	.06	
69,300	-----	Ab't .80 in. cr's'd to 1.80	-----	Ultimate strength = 14,740 pounds per square inch.
5,000	-----	.07	-----	

Column rotated concave side up. Pins horizontal and counterweights removed.

Load of 47,700 pounds sustained after above permanent deflection of .07 inch, when loaded with own weight transversely.

Time of test, one hour.

19.—6-INCH CHANNELS. 8 inches apart.

Like 18.

Total length, c. to c. of pin holes, 30 feet.

Gauged length, 320 inches.

Total weight, 792 pounds.

	Sq. in.
Upper channel bar, 30 feet 8 inches, 243 pounds, .22-inch web.....	2.377
Lower channel bar, 30 feet 8 inches, 241 pounds, .22-inch web.....	2.358
Sectional area	4.73

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000	.....	.....	.....
10,000	.0075	0.	.06	
20,000	.0280	— .04	.10	
30,000	.0524	— .10	.10	
40,000	.0764	— .15	.10	
45,000	.0885	— .20	.10	
50,000	.1008	— .25	.10	
5,000	.0010	— .04	.01	
55,000	.1135	— .30	.10	
60,000	.1240	— .35	.10	
65,000	.1370	— .43	.10	
70,000	.1490	— .57	.10	
75,200	.....	1.00	.....	Ultimate strength = 15,900 pounds per square inch.
5,000	.....	— .10	0.	
Pressure released as soon as the ultimate strength was determined, the column gradually yielding under 75,200 pounds.				
Column rotated, bringing pins horizontal, counterweights removed.				
47,200 sustained by column in above condition. A weight of 100 pounds now placed on middle of column. Sustaining power reduced to—				
44,700	.....	.....	.....
As soon as yielding began, the 100-pound weight was removed and the column recovered strength and sustained—				
46,400	.....	.....	.....
The effect of a transverse load of 100 pounds at the middle of the column assumed to be $\left(\frac{47,200 + 46,400}{2}\right) - 44,700 = 2,100$ pounds.				

20.—6-INCH CHANNELS. 8 inches apart.

Details of column same as 18, except that end plates were 15" × ¼", and all lattice bars were 2" × ¼".

Total length, c. to c. of pin holes, 27 feet 6 inches.

Gauged length, 280 inches.

Total weight, 711 pounds.

	Sq. in.
Upper channel bar, 28 feet 2 inches, 216 pounds, .21-inch web.....	2.301
Lower channel bar, 28 feet 2 inches, 224 pounds, .22½-inch web.....	2.386
Sectional area	4.69

.00½-inch packing used at one end.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0076	0.	.02	
20,000	.0256	0.	.03	
30,000	.0444	0.	.03	
40,000	.0634	0.	.04	
45,000	.0724	0.	.05	
50,000	.0820	.01	.05	
5,000	.0076	0.	0.	
55,000	.0911	.01	.05	
60,000	.1001	.02	.05	
5,000	.0080	0.	0.	
65,000	.1211	.03	.05	
70,000	.1306	.04	.05	
75,000	.1406	.04	.05	
80,000	.1571	.05	.05	
5,000	.0086	0.	0.	
85,000	.1606	.09	.04	
90,000	.1716	.13	.03	
100,000		.28	.04	
102,500		.65		Ultimate strength = 21,850 pounds per square inch.
		.70		Deflection increased to this reading.
Strains released momentarily when rapid bending commenced.				
5,000		.08	0.	
Column rotated, bringing pins horizontal, concave side up. Counterweights removed.				
58,500	Load sustained.			
58,000	Load released when strain had dropped to this load.			
54,500	Load sustained with 100-pound load at middle.			
56,500	Load sustained with 100-pound load at middle removed.			
Hence the effect of 100 pounds transverse load at middle appears to be				
$\left(\frac{58,000 + 56,500}{2}\right) - 54,500 = 2,750$ pounds.				

21.—6-INCH CHANNELS. 8 inches apart.

Like 20.

All lattice bars on one side of column were $\frac{3}{16}$ inch thick. Bars on the other side were $\frac{1}{16}$ inch thick, excepting 7 scattering ones, which were $\frac{1}{4}$ inch thick.

Total length, c. to c. of pin holes, 27 feet 6 inches.

Gauged length, 280 inches.

Total weight, 735 pounds.

Upper channel bar, 28 feet 2 inches, 222 pounds, .22 inch web	Sq. in 2.365
Lower channel bars, 28 feet 2 inches, 216 pounds, .21 inch web	2.301

Sectional area..... 4.67

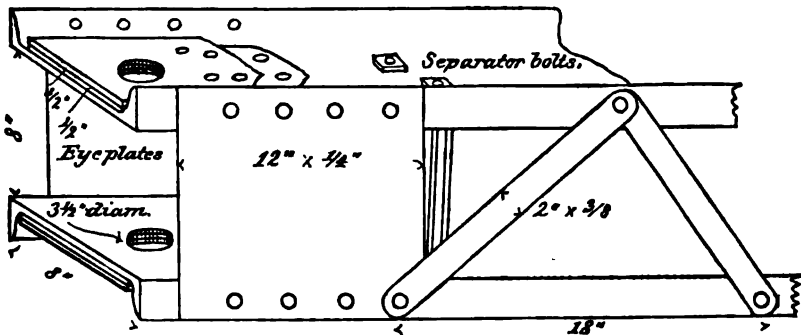
.05 inch packing used at one end, .06 inch at other end.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0081	— .02	.02	
20,000	.0306	— .04	.02	
30,000	.0526	— .06	.02	
40,000	.0744	— .07	.02	
50,000	.0960	— .10	.02	
5,000	.0011	0.	0.	
60,000	.1181	— .13	.01	

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
70,000	.1396	— .20	0.	
75,000	.1506	— .23	0.	
80,000	.1616	— .28	0.	
5,000	.0020	— .03	0.	
85,000	.1724	— .32	0.	
90,000	.1896	— .40	0.	
97,200	-----	— .70	-----	Ultimate strength = 20,810 pounds per square inch.

Column reached its ultimate strength when the horizontal deflection had reached —.70 inch; it then suddenly deflected $3\frac{1}{2}$ inches, striking against a check block which prevented further deflection.

22.—8-INCH CHANNELS. 8 inches apart.



Total length, c. to c. of pin holes, 30 feet.

Gauged length, 320 inches.

Total weight, 1,230 pounds.

	Sq. in.
Upper channel bar, 30 feet 8 inches, 398 pounds, .30 inch web	3.893
Lower channel bar, 30 feet 8 inches, 400 pounds, .30 inch web	3.913

Sectional area 7.81

Packing used behind ends, .01 and .03 inch.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inches.</i>	<i>Inch.</i>	
5,000	-----	-----	-----	
10,000	.0066	0.	0.	
20,000	.0182	0.	.05	
30,000	.0332	.01	.06	
40,000	.0472	.03	.06	
50,000	.0622	.05	.06	
5,000	.0018	0.	.02	
60,000	.0777	.06	.04	
70,000	.0926	.07	.03	
80,000	.1076	.09	.03	
90,000	.1226	.10	.02	

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inches.</i>	<i>Inch.</i>	
100,000	.1876	.12	.02	
5,000	.0024	0.	.03	
110,000	.1512	.13	.01	
120,000	.1660	.15	.01	
130,000	.1812	.17	.01	
140,000	.1967	.20	0.	
150,000	.2122	.23	0.	
5,000	.0020	0.	.02	
160,000	.2282	.25	0.	
170,000	.2450	.30	— .01	
180,000	.2636	.41	— .02	
190,000	.2852	.60	— .03	
194,100	.90	.....	.....	Ultimate strength = 24,850 pounds per square inch.
	Deflected suddenly to—	4.50	.....
5,000	.....	1.06	.....	Permanent deflection.
Scales slightly disturbed about rivets on the concave side of the column at the middle, and very marked disturbance of scale about middle separator bolt holes.				
120,000	.....	4.60	.....	Load sustained after above deflection.
Strains released. Column rotated, bringing pins into horizontal position, concave side up. Counterweights removed.				
107,100	Ultimate strength of column loaded at middle with 100 pounds.			
108,300	Ultimate strength of column load at middle removed.			
1,200	Effect of transverse load of 100 pounds on the compressive strength of the column.			

23.—8-INCH CHANNELS. 8 inches apart.

Like 22.

Total length, c. to c. of pin holes, 30 feet.

Gauged length, 320 inches.

Total weight, 1,233 pounds.

Upper channel bar, 30 feet 8 inches, 400 pounds, .30 inch web	Sq. in. 3.913
Lower channel bar, 30 feet 8 inches, 397 pounds, .30 inch web	3.684

Sectional area..... 7.80

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inches.</i>	<i>Inch.</i>	
5,000	.....	.....	.....
10,000	.0075	0.	0.	
20,000	.0235	0.	— .01	
30,000	.0380	0.	— .01	
40,000	.0525	0.	— .01	
50,000	.0675	0.	— .01	
5,000	.0010	0.	— .01	
60,000	.0820	0.	— .01	
70,000	.0973	0.	— .01	
80,000	.1120	.01	— .01	
90,000	.1270	.03	— .01	
100,000	.1415	.04	— .01	
5,000	.0013	0.	— .01	
110,000	.1560	.05	— .01	
120,000	.1710	.06	— .01	
130,000	.1855	.07	0.	
140,000	.2005	.08	0.	
150,000	.2155	.10	0.	
5,000	.0020	0.	— .01	
160,000	.2309	.11	0.	
170,000	.2475	.15	0.	
180,000	.2660	.17	0.	

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Barrels.</i>	<i>Inch.</i>	<i>Inches.</i>	<i>Inch.</i>	
190,000	.2809	.22	0.	
200,000	.3009	.30	0.	
5,000	.0145	.03	— .02	
210,000	.3240	.70	0.	Ultimate strength = 26,920 pounds per square inch. Column suddenly deflected horizontally to this reading.
.....	.....	5.00	.....
5,000	.....	1.23	.....
100,000	.....	2.96	.....
115,000	.....	4.30	.....
118,100	.....	5.00	.....	Highest load sustained after the above permanent deflection of 1.23 inch.
5,000	.....	1.25	.....
Column rotated; pins brought into horizontal position concave side up; counterweights removed.				
106,800	Load sustained with transverse load of 100 pounds at middle.			
108,050	Load sustained with transverse load removed.			
1,150	Effect of transverse load of 100 pounds.			

24.—8-INCH CHANNELS. 8 inches apart.

Details same as 22, except that end plates were 15" × ¼".

Total length, c. to c. of pin holes, 26 feet 8 inches.

Gauged length, 280 inches.

Total weight, 1,120 pounds.

Upper channel bar, 27 feet 4 inches, 354 pounds, .29 inch web.....	Sq. in.	3.885
Lower channel bar, 27 feet 4 inches, 355 pounds, .29 inch web.....		3.896
Sectional area.....		7.78

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000	.....	.....	.....
10,000	.0045	0.	.04	
20,000	.0160	0.	.05	
30,000	.0285	0.	.05	
40,000	.0410	0.	.06	
50,000	.0530	0.	.07	
5,000	0.	0.	0.	
60,000	.0650	0.	.07	
70,000	.0770	0.	.08	
80,000	.0895	0.	.09	
90,000	.1020	0.	.10	
100,000	.1150	0.	.10	
5,000	0.	0.	0.	
110,000	.1280	0.	.10	
120,000	.1390	0.	.10	
130,000	.1540	0.	.10	
140,000	.1670	0.	.10	
150,000	.1800	0.	.10	
5,000	.0005	0.	0.	
160,000	.1935	— .01	.10	
170,000	.2075	— .01	.10	
180,000	.2210	— .01	.10	
190,000	.2370	— .03	.11	
200,000	.2538	— .03	.12	
5,000	.0095	0.	.04	
210,000	.2820	— .03	.13	
220,000	.2914	— .03	.15	
230,000	.3165	0.	.19	
5,000	.0344	.03	.10	
240,000	.....	.10	.22	
243,900	.....	.50	.....	Ultimate strength = 31,350 pounds per square inch.

After passing the ultimate strength the supply of oil was shut off from the cylinder of the straining press, checking the piston movement. The deflection of the column, however, continued till it reached .80 inch horizontally, when the column suddenly sprung, increasing the deflection to 5 inches.

25.—8-INCH CHANNELS. 8 inches apart.

Like 24.

Total length, c. to c. of pin holes, 26 feet 8 inches.

Gauged length, 280 inches.

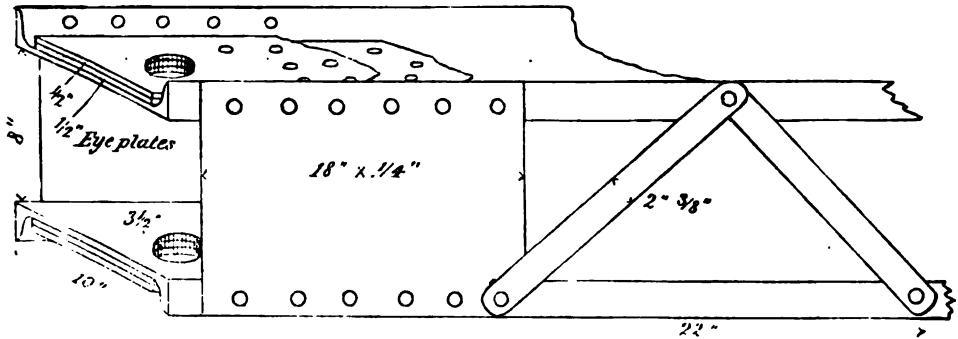
Total weight, 1,119 pounds.

	Sq. in.
Upper channel bar, 27 feet 4 inches, 352 pounds, .29 inch web.....	3.882
Lower channel bar, 27 feet 4 inches, 354 pounds, .30 inch web.....	3.885
Sectional area	7.75

Packing used behind one end, .01½ inch.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inches.	Inch.	
5,000	.....	0.	0.	
10,000	.0090	0.	— .01	
20,000	.0230	0.	— .02	
30,000	.0360	0.	— .03	
40,000	.0500	0.	— .04	
50,000	.0640	0.	0.	
5,000	.0015	0.	— .04	
60,000	.0768	.02	— .05	
70,000	.0904	.03	— .05	
80,000	.1034	.04	— .05	
90,000	.1165	.05	— .05	
100,000	.1295	.05	— .01	
5,000	.0025	0.	— .06	
110,000	.1434	.06	— .07	
120,000	.1565	.07	— .08	
130,000	.1700	.08	— .08	
140,000	.1834	.09	— .08	
150,000	.1978	.10	— .01	
5,000	.0054	0.	— .09	
160,000	.2118	+ .12	— .10	
170,000	.2278	+ .14	— .10	
180,000	.2420	.16	— .12	
190,000	.2608	.19	— .14	
200,000	.2798	.25	— .07	
5,000	.0240	.04	.....
215,800	.....	1.00	.....	Ultimate strength=27,850 pounds per square inch.
After passing the ultimate strength the column suddenly sprung till the horizontal deflection = 3.80 inches.				
5,000	.....	1.37	.....
100,000	.....	2.44	.....
132,600	.....	3.950	.....	Sustained after above permanent deflection of 1.37 inches.

26.—10-INCH CHANNELS. 8 inches apart.



Total length, c. to c. of pin holes, 29 feet 2 inches.

Gauged length, 300 inches.

Total weight, 1,413 pounds.

	Sq. in.
Upper channel bar, 30 feet 8 inch, 457 pounds, .325 inch web	4.471
Lower channel bar, 30 feet 8 inches, 494 pounds, .35 inch web	4.832
Sectional area	9.30

Packing used behind one end, .01½ inch.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0045	0.	.01	
20,000	.0150	0.	.02	
50,000	.0480	0.	.03	
80,000	.0815	0.	.03	
100,000	.1040	0.	.03	
5,000	.0023	0.	0.	
120,000	.1280	0.	.03	
140,000	.1502	0.	.01	
150,000	.1615	0.	0.	
5,000	.0030	0.	0.	
180,000	.1965	0.	0.	
200,000	.2199	.03	— .01	
5,000	.0050	0.	0.	
210,000	.2329	.04	— .02	Scale started in vicinity of separate bolt holes.
220,000	.2443	.04	— .02	
230,000	.2565	.04	— .02	
240,000	.2695	.05	— .02	
250,000	.2830	.07	— .02	
260,000	.2970	.08	— .02	
270,000	.3135	.10	— .02	
280,000	.3295	.13	— .02	
290,000	.3500	.22	0.	
299,300		.50		
				Ultimate strength = 32,180 pounds per square inch.

" Strains gradually reduced as the deflection increased till the horizontal deflection reached 1 inch, when the load sustained was 290,000 pounds. The column then suddenly deflected to 4½ inches, buckling the channel bars between the latticing on the concave side.

27.—Like 26.

Total length, c. to c. of pin holes, 29 feet 2 inches.

Gauged length, 300 inches.

Total weight, 1,445 pounds.

	Sq. in.
Upper channel bar, 30 feet 8 inches, 498 pounds, .35-inch web.....	4.872
Lower channel bar, 30 feet 8 inches, 480 pounds, .33-inch web.....	4.686
Sectional area.....	9.57

Packing used at one end, .01½ inch.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0068	0.	0.	
20,000	.0180	0.	— .01	
30,000	.0285	0.	— .02	
50,000	.0498	.01	— .03	
80,000	.0815	.03	— .04	
100,000	.1030	.05	— .05	
5,000	.0015	0.	0.	
120,000	.1245	.07	— .05	
140,000	.1464	.08	— .06	
150,000	.1574	.09	— .07	
5,000	.0024	0.	0.	
180,000	.1925	.11	— .08	
200,000	.2154	.14	— .08	
5,000	.0040	0.	0.	
210,000	.2275	.14	— .10	
220,000	.2390	.15	— .10	
230,000	.2510	.17	— .11	
240,000	.2638	.19	— .12	
250,000	.2770	.23	— .13	
5,000	.0118	.02	— .02	
260,000	.2928	.26	— .15	
270,000	.3090	.36	— .17	
280,000	.3290	.57	— .19	
281,200		.80		Ultimate strength=29,380 pounds per square inch.

When horizontal deflection reached 1 inch and load was reduced to 278,000 pounds, rapid deflection took place to 3.80 inches.

28.—12-INCH CHANNELS. 8 inches apart.

Details same as 7, except that end plates were 18" × ¼".

Total length, c. to c. of pin holes, 30 feet.

Gauged length, 300 inches.

Total weight—

	Sq. in.
Upper channel bar, 30 feet 8 inches, 606 pounds, .31-inch web.....	5.922
Lower channel bar, 30 feet 8 inches, 639 pounds, .33-inch web.....	6.251
Sectional area.....	12.17

Packing used at one end, .05 inch.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inch.	Inch.	
5,000				
10,000	.0035	0.	0.	
50,000	.0375	0.	0.	
80,000	.0629	0.	— .02	
100,000	.0810	0.	— .02	
5,000	.0023	0.	— .01	
120,000	.0990	0.	— .02	

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
140,000	.1175	0.	— .03	
150,000	.1265	0.	— .03	
180,000	.1545	0.	— .05	
200,000	.1725	0.	— .06	
5,000	.0050	0.	— .02	
220,000	.1935	0.	— .09	
250,000	.2125	0.	— .09	
260,000	.2220	0.	— .10	
270,000	.2320	0.	— .11	
280,000	.2415	0.	— .12	
290,000	.2523	0.	— .13	
300,000	.2620	0.	— .13	
5,000	.0095	0.	— .03	
310,000	.2775	— .02	— .16	
320,000	.2885	— .03	— .18	
330,000	.3003	— .04	— .20	
340,000	.3150	— .05	— .22	
350,000	.3285	— .05	— .25	
360,000	.3435	— .05	— .30	
370,000	.3635	— .07	— .35	
380,000	.3905	— .10	— .45	
385,000				Ultimate strength = 31,610 pounds per square inch.

Failed by buckling channel bars, 30 inches to 36 inches from c. of pin hole. Load sustained when strains were released, 379,600 pounds.

Column rotated, bringing the pins horizontal; counterweights removed. Strains again applied. When pressure reached 380,000 pounds yielding continued at the end as before, without vertical or horizontal flexure.

29.—Like 28.

Total length, c. to c. of pin holes, 30 feet.

Gauged length, 300 inches.

Total weight, 1,790 pounds.

	Sq. in.
Upper channel bar, 30 feet 8 inches, 636 pounds, .33-inch web.....	6.241
Lower channel bar, 30 feet 8 inches, 644 pounds, .34-inch web.....	6.300
Sectional area.....	12.54

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
5,000				
10,000	.0035	0.	0.	
50,000	.0320	0.	.02	
80,000	.0545	0.	.04	
100,000	.0704	0.	.04	
5,000	0.	0.	0.	
120,000	.0868	.02	.04	
150,000	.1115	.03	.04	
180,000	.1370	.05	.04	
200,000	.1540	.06	.04	
5,000	.0008	0.	0.	
220,000	.1800	.07	.08	
250,000	.1975	.09	.03	
260,000	.2060	.10	.03	
270,000	.2148	.10	.03	
280,000	.2240	.12	.03	
290,000	.2340	.13	.03	

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
300,000	.2420	.14	.03	
5,000	.0044	0.	0.	
310,000	.2525	.14	.04	
320,000	.2620	.15	.04	
330,000	.2724	.16	.04	
340,000	.2840	.18	.06	
350,000	.2935	.23	.07	
370,000	.3205	.30	.10	
393,000	.....	.80	.....	Ultimate strength = 31,340 pounds per square inch.
Column failed by horizontal deflection.				
382,000	.....	1.10	.....	Load sustained immediately before releasing load to the initial, 5,000 pounds.
5,000	.....	.44	.....	Permanent deflection.
Column rotated, bringing pins into horizontal position, concave side up. Counterweights removed, and column loaded transversely with 500 pounds at middle.				
343,800 pounds sustained under this transverse load.				
349,700 pounds sustained with transverse load removed.				
6,400 pounds, effect of transverse load of 500 pounds.				

NOTES ON TESTS OF LATTICED COLUMNS.

All columns with pin bearings tested with the pins in a vertical position.

Columns over 12 feet in length supported at the middle by a counterweight of half the weight of the column.

Strains gradually applied; the time of the test occupying $1\frac{1}{2}$ hours, unless otherwise stated in the detailed notes of the test.

Sectional areas of channel bars computed from the weights of the bars before the rivet holes and pin holes were made; calling the sectional area in square inches one-tenth the weight of the bar in pounds per yard.

Horizontal and vertical deflections measured at the middle of the columns.

The compressions measured within the gauged length, a distance laid off along the middle of the upper channel bar, always taking a gauged length less than the distance between the eye plates, to avoid any disturbance of the channel bar webs the eye plates might occasion.

Many columns were found to have the pin holes bored out of parallel and not at right angles to the axis of the column. In such cases thin brass packing was placed between the bolsters, carrying the pins of the columns, and the faces of the compression platforms of the testing machine.

When such packing was used, the amount in thickness is recorded, showing what was necessary to secure a good bearing for the ends.

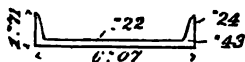
The eye plates, riveted to the webs of the channel bars, in some cases slipped, allowing the pin hole in the web to elongate without disturbing the holes in the riveted plate. The slipping probably took place when the friction of the rivet heads was overcome.

COMPRESSION OF CHANNEL BARS.

From Detroit Bridge and Iron Company.

Channel bars pressed between flat steel plates. Same channels as used in lattice columns from Detroit.

1049.—6-INCH CHANNEL, 1 diameter long (6 inches).

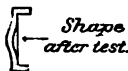


Weight, $3\frac{1}{2}$ pounds.

Length, 6 inches.

Sectional area, 2.33 square inches.

Ultimate strength, 98,530 pounds = 42,290 pounds per square inch.



Scale started on web at end of specimen under load of 73,000 pounds = 31,330 pounds per square inch.

This indicates approximately the elastic limit.

The web failed first, the flanges afterward bending inward.

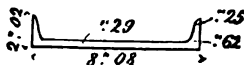
1050.—6-INCH CHANNEL. 6 inches long.

Same as 1049.

Ultimate strength, 99,480 pounds = 42,695 pounds per square inch.

Failed in same manner as 1049.

1051.—8-INCH CHANNEL. 8 inches long.



Weight, $8\frac{1}{2}$ pounds.

Sectional area, 3.85 square inches.

Ultimate strength, 164,700 pounds = 42,780 pounds per square inch.

Failed same as 1049. Web gave way first.

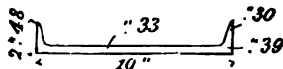
1052.—8-INCH CHANNEL. 8 inches long.

Same as 1051.

Ultimate strength, 168,670 pounds = 43,810 pounds per square inch.

Failed same as 1049. Web gave way and then flanges buckled inward. After the ultimate strength had been determined by the slow and gradual application of strain, the load was rapidly increased until the channel bar momentarily sustained 175,000 pounds, during which time, however, the bending continued rapidly. The specimen was buckled till longitudinal cracks (parallel to rolling) appeared, showing fibrous iron. Fractures all began on tension or convex side of bends.

1053.—10-INCH CHANNEL. 10 inches long.



Weight, $13\frac{1}{2}$ pounds.

Sectional area, 4.78 square inches.

Ultimate strength, 166,400 pounds = 34,810 pounds per square inch.

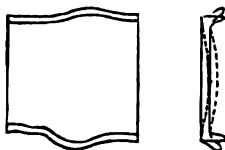
Shape after buckling same as 1049.

Failure of web and flanges occurred simultaneously.

1054.—10-INCH CHANNEL. 10 inches long.

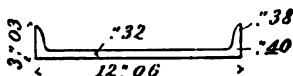
Same as 1053.

Ultimate strength, 169,000 pounds=35,350 pounds per square inch.



Failed first by the bending of the web inward and then of the flanges outward.

1055.—12-INCH CHANNEL. 12 inches long.



Weight, 20½ pounds.

Sectional area, 5.97 square inches.

Ultimate strength, 222,300 pounds=37,240 pounds per square inch.

Failed same as 1054.

1056.—12-INCH CHANNEL. 12 inches long.

Same as 1055.

Ultimate strength, 222,300 pounds=37,240 pounds per square inch.

Failed same as 1054.

1061.—12-INCH CHANNEL BAR. 48 inches long.

Weight, 82½ pounds.

Sectional area, 6.19 square inches.

Compressed between cast-iron platforms.

Ultimate strength, 223,100 pounds=36,040 pounds per square inch.

Failed same as 1054; that is, the web bent inward and the flanges outward.

1062.—10-INCH CHANNEL BAR. 48 inches long.

Weight, 63½ pounds.

Sectional area, 4.76 square inches.

Ultimate strength, 162,250 pounds=34,080 pounds per square inch.

Failed by bending upward, deflecting as a column.

Scale started off web of channel at 128,000 pounds = 26,890 pounds per square inch.

1063.—8-INCH CHANNEL BAR. 48 inches long.

Weight, 49½ pounds.

Sectional area, 3.73 square inches.

Ultimate strength, 114,200 pounds=30,620 pounds per square inch.

Failed by bending downward, deflecting as a column.

Neither flanges nor web buckled or bent locally.

Deflection sudden under maximum load.

1064.—6-INCH CHANNEL BAR. 48 inches long.

Weight, 31½ pounds.

Sectional area, 2.38 square inches.

Ultimate strength, 66,980 pounds = 28,140 pounds per square inch.

Failed by bending downward, deflecting as a column.

Flanges and web not buckled locally.

Deflection sudden under maximum load.

1065.—8-INCH CHANNEL BAR. 23.85 inches long.

Sectional area, 3.73 square inches.

Ultimate strength, 136,300 pounds = 36,540 pounds per square inch.

Failed by web bending inward slightly, 4 inches from the end, and by bending downward as a column without further buckling of web. Flanges not buckled.

1066.—8-INCH CHANNEL BAR. 23.85 inches long.

Same as 1064.

Sectional area, 3.73 square inches.

Ultimate strength, 132,100 pounds = 35,410 pounds per square inch.

Failed same as 1065.

1067.—8-INCH CHANNEL BAR. 29.90 inches long.

Sectional area, 3.73 square inches.

Ultimate strength, 124,600 pounds = 33,400 pounds per square inch.

Failed by bending as column; web and flanges not buckled. Bent downward.

1068.—8-INCH CHANNEL BAR. 17.90 inches long.

Sectional area, 3.73 square inches.

Ultimate strength, 131,600 pounds = 35,280 pounds per square inch.

Deflected at middle. Web bent inward and flanges outward.

1069.—6-INCH CHANNEL BAR. 23.83 inches long.

Weight, 14½ pounds.

Sectional area, 2.23 square inches.

Ultimate strength, 78,400 pounds = 35,160 pounds per square inch.

Failed by bending at middle as a column.

1070.—6-INCH CHANNEL BAR. 23.90 inches long.

Weight, 15½ pounds.

Sectional area, 2.37 square inches.

Ultimate strength, 77,400 pounds = 32,660 pounds per square inch.

Failed by deflecting downward at middle.

1071.—6 INCH CHANNEL BAR. 17.58 inches long.

Same as 1070.

Sectional area, 2.37 square inches.

Ultimate strength, 86,900 pounds = 36,670 pounds per square inch.

Failed by deflection at middle.

Bending continued till channel was concave 1 inch at middle. Flanges slightly buckled.

1072.—6-INCH CHANNEL BAR. 17.70 inches long.

Same as 1069.

Sectional area, 2.23 square inches.

Ultimate strength, 82,500 pounds = 37,000 pounds per square inch.

Deflected at middle.

1073.—10-INCH CHANNEL BAR. 29.9 inches long.

Weight, $39\frac{1}{2}$ pounds.

Sectional area, 4.76 square inches.

Ultimate strength, 162,100 pounds = 34,050 pounds per square inch.

Web buckled outward; flanges buckled inward.

1074.—10-INCH CHANNEL BAR. 17.85 inches long.

Same as 1073.

Sectional area, 4.76 square inches.

Ultimate strength, 161,000 pounds = 33,820 pounds per square inch.

Failed by web bending outward and flanges inward.

1075.—10-INCH CHANNEL BAR. 23.9 inches long.

Weight, $33\frac{1}{2}$ pounds.

Sectional area, 5.04 square inches.

Ultimate strength, 176,800 pounds = 35,080 pounds per square inch.

6 inches from end web bent inward and flanges outward.

1076.—10-INCH CHANNEL BAR. 23.87 inches long.

Same as 1075.

Sectional area, 5.04 square inches.

Ultimate strength, 169,500 pounds = 33,630 pounds per square inch.

Failed by web bending outward and flanges inward.

1077.—12-INCH CHANNEL BAR. 23.92 inches long.

Weight, 40 pounds.

Sectional area, 6.02 square inches.

Ultimate strength, 218,800 pounds = 36,350 pounds per square inch.

Failed same as 1076.

1078.—12-INCH CHANNEL BAR. 23.87 inches long.

Same as 1077.

Sectional area, 6.02 square inches.

Ultimate strength, 223,000 pounds = 37,040 pounds per square inch.

Failed same as 1076.

1079.—12-INCH CHANNEL BAR. 17.84 inches long.

Weight, 29½ pounds.

Sectional area, 5.95 square inches.

Ultimate strength, 217,700 pounds = 36,590 pounds per square inch.

Failed by web bending inward and flanges outward.

1080.—12-INCH CHANNEL BAR. 29.90 inches long.

Same as 1079.

Weight, 49½ pounds.

Sectional area, 5.96 square inches.

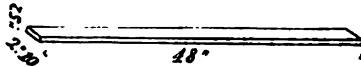
Ultimate strength, 209,500 pounds = 35,150 pounds per square inch.

Failed by web bending outward and flanges inward.

TENSILE TESTS OF WROUGHT-IRON BARS FROM THE DETROIT BRIDGE AND IRON COMPANY.

1226.

Same iron as used in the columns furnished by the company.



Rough bar.

Sectional area, 1.09 square inches.

Gauged length, 20 inches.

Loads.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches</i>	<i>Inch.</i>	
1,000	1,000			
5,450	5,000	.0017		
10,900	10,000	.0045		
	1,000		.0010	
16,350	15,000	.0077		
21,800	20,000	.0110		
	1,000		.0005	
21,900	20,170	.0107		
23,080	21,170	.0111		
24,170	22,170	.0120		
25,260	23,170	.0127		
26,350	24,170	.0135		
	1,000		.0001	
27,440	25,170	.0131		
28,530	26,170	.0140		
29,620	27,170	.0145		
30,710	28,170	.0151		
32,700	30,000	.0165		
	1,000		— .0009	
33,790	31,000	.0165		
34,880	32,000	.0171		
35,970	33,000	.0230		Elastic limit.
38,150	35,000	.50		
52,880	48,510			Ultimate strength.
0	0	3.80		= 19 per cent.

Elongation of 5-inch sections after fracture: ".91, 1".10, * ".92, ".87.

Area at fracture, 1".77 × ".44 = .779 square inches.

Contraction of area, 28.5 per cent.

Fibrous fracture.

1227.

Same iron and shape as 1226.

Sectional area, $2''.01 \times '' .52 = 1.04$ square inch.

Gauged length, 20 inches.

Bar not straight.

Loads.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
1,040	1,000			
5,200	5,000	.0028		
10,400	10,000	.0056		
	1,000		0.	
15,600	15,000	.0085		
20,800	20,000	.0116		
	1,000		0.	
26,000	25,000	.0142		
	1,000		0.	
27,040	26,000	.0145		
28,080	27,000	.0150		
29,120	28,000	.0160		
30,160	29,000	.0165		
31,200	30,000	.0172		
	1,000		— .0008	
32,240	31,000	.0180		
33,280	32,000	.0185		
34,320	33,000	.0190		Elastic limit.
35,360	34,000	.0200		
36,400	35,000	.45		
52,900	50,870			Ultimate strength.
0	0	3.50		= 17.5 per cent.

Elongation of 5-inch sections: ".80, ".84, ".87, ".99.

Area at fracture, $1''.74 \times '' .44 = .766$ square inches.

Contraction of area, 26.4 per cent.

Fibrous fracture. Broke 2 inches outside the gauged section.

1228.

Same iron as 1226.

Total length, 48 inches.

Gauged length, 20 inches.

Sectional area, $2''.01 \times '' .52 = 1.04$ square inches.

Bar not straight.

Loads.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
1,040	1,000			
5,200	5,000	.0035		
10,400	10,000	.0070		
	1,000		.0005	
15,600	15,000	.0110		
20,800	20,000	.0151		
	10,000		.0010	
26,000	25,000	.0191		
	1,000		.0015	
27,040	26,000	.0201		
28,080	27,000	.0211		
29,120	28,000	.0221		
30,160	29,000	.0235		
31,200	30,000	.0251		
	1,000		.0035	Elastic limit.
32,240	31,000	.0387		
33,280	32,000	.0655		
34,320	33,000	.1415		
35,360	34,000	.3165		
52,150	50,140			Ultimate strength.
0	0	3.93		= 19.6 per cent.

Elongation of 5-inch sections: $1''.06, 1''.05, 1''.20, * '' .62$.Area at fracture, $1''.76 \times '' .44 = .774$ square inches.

Contraction of area, 25.6 per cent.

Fibrous fracture.

LATTICE COLUMNS.

Detroit Bridge Company.

COMPRESSION TESTS OF 8 WROUGHT-IRON COLUMNS.

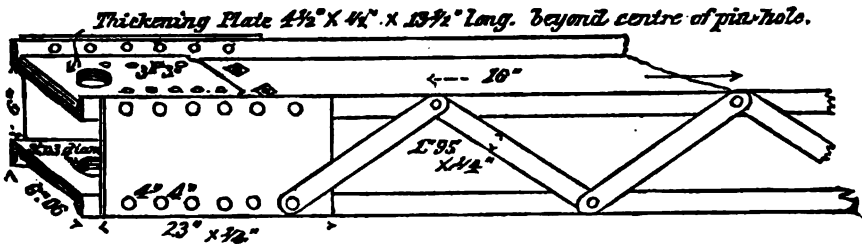
Columns tested with 3-inch pin bearings at each end; placed in position in the machine with pins vertical. The web of the channel beams horizontal.

Columns supported at middle by counterweights of half their own weight.

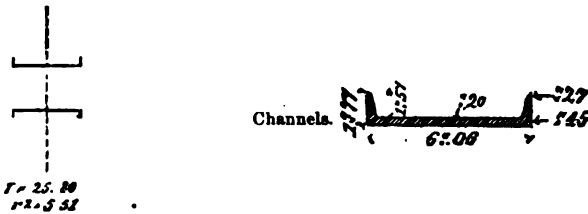
Compression gaugings taken for length between the eye and side plates, along the middle of the upper channel bar.

Deflections measured at the middle.

463.



Same plates at each end.



Sectional area, channel bars, 4.68 square inches.

Total length, c. to c. of pin holes, 240 inches=20 feet.

Weight of column, 540 pounds.

Gauged length, 190.5 inches.

Loads applied.	Pounds per square inch.	Compression.	Deflections.		Remarks.
			Horizontal.	Vertical.	
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	Minus deflections are downward when referring to vertical deflections.
8,960	2,000				
23,400	5,000	.019	0.	.03	
32,760	7,000	.033	0.	.04	
	9,000	0.	0.	0.	
45,900	10,000	.054	.02	.05	
56,160	12,000	.069	.03	.05	
	2,000	.001	0.	0.	
65,520	14,000	.084	.05	.06	
	2,000	.002	0.	0.	
74,880	16,000	.099	.06	.06	
	2,000	.003	0.	0.	
84,240	18,000	.115	.06	.06	
	2,000	.004	0.	0.	
93,600	20,000	.130	.12	.06	
	2,000	.006	0.	0.	

Loads applied.	Pounds per square inch.	Compression.	Deflections.		Remarks.
			Horizontal.	Vertical.	
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
98,280	21,000	.129	.14	.06	
102,960	22,000	.149	.16	.06	
	2,000	.009	.02	0.	
107,640	23,000	.159	.21	.06	
112,320	24,000	.170	.32	.06	
	2,000	.016	.07	0.	
117,000	25,000				Ultimate strength. Deflects sideways.
	2,000		1.25	— .02	
77,600	2,000		3.14	— .02	Sustained after 1.25 inch deflection.
57,200	2,000		6.18	— .02	Sustained after 3.14 inches deflection.
38,000			8.50	— .02	Sustained after 6.18 inches deflection.

Loads applied gradually till the ultimate strength was determined. It sustained 117,000 pounds momentarily, the pressure quickly running down and rapid bending taking place. Bending was continued till the permanent deflection under the initial load was 1.25 inch. It sustained 77,600 pounds, as above, after this deflection.

The last two readings show the load sustained to be 38,000 pounds after permanent deflection of 6.18 inches at initial load. The actual deflection of the column while sustaining this load was 8.50 inches, showing an elasticity for bending of 2.32 inches.

Channel bars began to buckle between the latticing at the middle of the column on the concave side.

No elongation of eyes.

Deflected westward.

NOTE.—Bolsters for pins have bearings each side of the column, and center bearing.

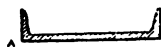
464.

Length, from c. to c. of pin holes, 300 inches=25 feet.

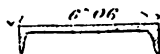
Weight, 647 pounds

Diameter of eyes, thickening plates, and latticing same as in 463.

Side plates 26 inches long and $\frac{1}{4}$ inch thick.



6



See 463 for dimensions of channels.

Sectional area of channels, 4.68 square inches.

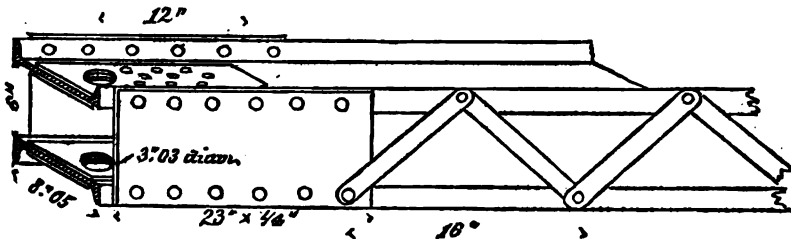
Column bent before test began, concave on west side, at middle, 3 inch.

Gauged length, 239.5 inches.

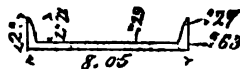
Loads applied.	Pounds per square inch.	Compression.	Deflections.		Remarks.
			Horizontal.	Vertical.	
Pounds.		Inch.	Inches.	Inch.	
9,360	2,000				
23,400	5,000	.032	.05	-.04	
32,780	7,000	.051	.10	-.04	
	2,000	.001	0.	0.	
46,800	10,000	.080	.18	-.03	
	2,000	.001	0.	0.	
56,160	12,000	.098	.26	-.03	
	2,000	.001	.02	+.02	
65,520	14,000	.117	.38	-.02	
	2,000	.001	.03	+.03	
71,400	15,280				Ultimate strength.
	2,000	.005	.12	+.03	
	10,000		.33		
	12,000		.47		
	14,000		.96		Sustained after permanent deflection of .12 inch.
69,900			1.80		
	2,000		1.38	+.07	
57,000			5.24	.12	
	2,000		4.63		
38,600			8.40		

No elongation of eyes. Column failed by bending in the direction of the initial bend.

465.



Thickening plates inside and outside of channel bars, $\frac{1}{2}$ inch thickness each.



$$I = 6971$$

$$r^2 = 9$$

Length, c. to c. of pin holes, 240 inches = 20 feet.

Weight, 850 pounds.

Sectional area (channels), 7.75 square inches.

Gauged length, 190.5 inches.

Loads applied.	Pounds per square inch.	Compression.	Deflections.		Remarks.
			Horizontal.	Vertical.	
Pounds.		Inch.	Inches.	Inch.	
15,500	2,000				
38,750	5,000	.026	0.	-.02	
54,250	7,000	.041	.01	-.02	
	2,000	.001	0.	0.	
77,500	10,000	.063	.01	-.02	
	2,000	.002	0.	0.	
93,000	12,000	.078	.02	-.01	

Loads applied.	Pounds per square inch.	Compression.	Deflections.		Remarks.
			Horizontal.	Vertical.	
<i>Pounds.</i>		<i>Inch.</i>	<i>Inches.</i>	<i>Inch.</i>	
108,500	2,000	.083	0.	+ .01	
	14,000	.092	.02	— .01	
	2,000	.003	0.	+ .02	
124,000	16,000	.106	.03	— .01	
	2,000	.003	0.	+ .02	
139,500	18,000	.120	.04	— .01	
	2,000	.004	0.	+ .01	
155,000	20,000	.136	.05	— .02	
	2,000	.007	0.	0.	
162,750	21,000	.144	.06	— .02	
170,500	22,000	.153	.07	— .02	
	2,000	.011	0.	— .01	
178,250	23,000	.162	.08	— .03	
186,000	24,000	.173	.09	— .03	
	2,000	.021	0.	— .03	
193,750	25,000	.183	.12	— .04	Elastic limit.
	2,000	.022	.02	— .04	
201,500	26,000	.198	.16	— .05	
	2,000	.028	.03	— .05	
209,250	27,000	.215	.27	— .07	
	2,000	.038	.09	— .06	
215,100	27,750				Ultimate strength. Heated one hour.
	2,000	.061	.45	— .09	
	2,000	.062			
195,900					Sustained after above deflection.
	2,000		2.45	0.	
127,200					Sustained after above deflection.
	2,000		4.33		
96,400			6.04		Sustained after above deflection.
	2,000		5.85		

Bending continued till permanent deflection at middle was 5.85 inches. At this time the buckling between the latticing had taken place on concave side. On the convex side fracture began through the flange of upper channel bar at middle rivet hole.

No elongation of holes.

Column deflected to the west.

466.

Same as 465, except of different length.

Total length, c. to c. of pin holes, 300 inches=25 feet.

Sectional area (channels), 7.75 square inches.

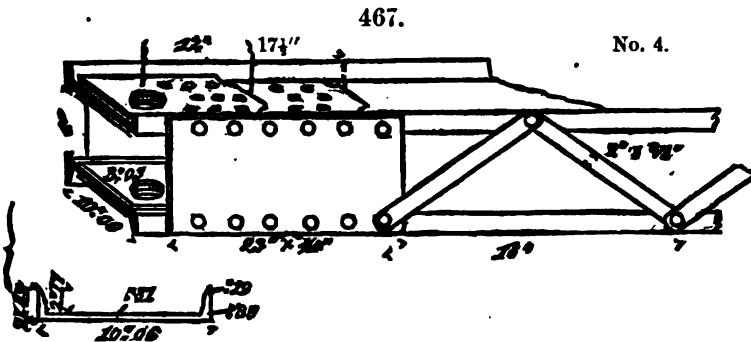
Weight, 1,064 pounds.

Gauged length, 242 inches.

Loads applied.	Pounds per square inch.	Compression.	Deflections.		Remarks.
			Horizontal.	Vertical.	
<i>Pounds.</i>		<i>Inch.</i>	<i>Inches.</i>	<i>Inch.</i>	
15,500	2,000				North end came to good bearing. South end required packing behind bolster at top.
38,750	5,000	.022	0.	.02	
54,250	7,000	.039	0.	.04	
	2,000	0.	0.	0.	
77,500	10,000	.059	.02	.12	
	2,000	0.	.01	— .02	
93,000	12,000	.074	.03	.15	
	2,000	0.	.01	0.	
108,500	14,000	.091	.03	.20	
	2,000	.001—	0.	— .02	
124,000	16,000	.108	.04	.25	
	2,000	.001—	0.	— .01	
	2,000	.004	.06	.02	Packing added at south end.

Loads applied.	Pounds per square inch.	Compression.	Deflections.		Remarks.
			Horizontal.	Vertical.	
<i>Pounds.</i>		<i>Inch.</i>	<i>Inches.</i>	<i>Inch.</i>	
	2,000	.004	0.	0.	Deflection gauge blocks readjusted.
	10,000		0.	.12	
	16,000	.114	.02	.17	
139,500	18,000	.132	.04	.17	
	2,000	.001	0.	0.	
155,000	20,000	.151	.03	.22	
	2,000	.003	0.	.02	
162,750	21,000	.161	.05	.25	
170,500	22,000	.171	.07	.27	
	2,000	.005	0.	.05	
178,250	23,000	.179	.10	.30	
186,000	24,000	.189	.13	.33	
	2,000	.006	.03	.07	
193,750	25,000	.199	.22	.37	
	2,000	.007	.07	.12	
201,500	26,000				Ultimate strength. This load sustained one minute. Then column rapidly deflected eastward.
	2,000		3.83	.90	Sustained after above deflection.
94,000			6.7	1.22	

Column bent with uniform curve. Channel bars not distorted between lattice bars.



I=122.34
r²=13.31

Double thickening plates on the outside, single plates inside, of channel bars. Plates $\frac{1}{2}$ inch thick.

Weight, 1,115 pounds.

Total length, 240 inches = 20 feet.

Sectional area of channels, 9.19 square inches.

Gauged length, 182 inches.

Column not straight originally, but concave on the under side, .22 inch.

Loads applied.	Pounds per square inch.	Compression.	Deflections.		Remarks.
			Horizontal.	Vertical.	
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	<i>Inches.</i>	
9, 190	1, 000				Sheet-brass packing behind south bolster at top.
45, 950	5, 000	.016	0.	.12	
64, 330	7, 000	.025	0.	.17	
	1, 000	0.	0.	0.	More packing put behind bolster.
9, 190	1, 000		0.	0.	
64, 330	7, 000	.028	0.	.13	
91, 900	10, 000	.044	0.	.17	

Loads applied.	Pounds per square inch.	Compression.	Deflections.		Remarks.
			Horizontal.	Vertical.	
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
110,280	1,000	0.	0.	.02	
	12,000	.057	.01	.17	
	1,000	0.	0.	.02+	
128,660	14,000	.070	.01	.19	
	1,000	0.	0.	.03	
147,040	16,000	.082	0.	.19	
	1,000	0.	0.	.03	
165,420	18,000	.094	.01	.20	
	1,000	0.	0.	.03	
183,800	20,000	.107	0.	.22	
	1,000	0.	— .01	.05	
192,990	2,100	.114	0.	.22	
202,180	22,000	.121	.02	.23	
	1,000	0.	— .02	.07	
211,370	23,000	.128	.02	.24	
220,560	24,000	.134	.02	.26	
	1,000	.002	— .02	.07	
229,750	25,000	.142	.02	.28	
	1,000	.003	— .02	.08	
238,940	26,000	.150	0.	.31	
	1,000	.004	— .02	.12	
248,130	27,000	.159	— .01	.35	
	1,000	.007	— .03	.16	
257,320	28,000	.168	— .01	.42	
	1,000	.010	— .03	.22	
275,500	29,980				Ultimate strength.
	1,000		.02	.87	Deflected upward. Column bent some more.
240,000			.02	1.58	Sustained after above deflection.
				2.15	

Column bent upwards, following the direction of the original bend. Took triple flexure, the channels buckling between the latticing at the concave parts of the curves of flexure.
No elongation of the eyes.

468.

Same size as 467, except in length.
Total length from c. to c. of pin holes, 300 inches=25 feet.
Gauged length, 235 inches.
Sectional area (channels), 9.19 square inches.
Weight, 1,343 pounds.
Column concave about 1 inch at middle of east side.

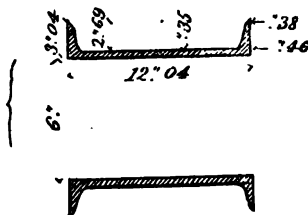
Loads applied.	Pounds per square inch.	Compression.	Deflections.		Remarks.
			Horizontal.	Vertical.	
<i>Pounds.</i>		<i>Inch.</i>	<i>Inches.</i>	<i>Inch.</i>	
9,190	1,000		0.	0.	Ends came to a good bearing.
45,950	5,000	.026	0.	.01	
	1,000	0.	0.	— .06	
64,330	7,000	.041	0.	.03	
91,900	10,000	.065	.01	.04	
	1,000	0.	.01	— .07	
110,280	12,000	.080	0.	0.	
	1,000	0.	.01	— .07	
128,660	14,000	.096	0.	— .02	
	1,000	.001	.01	— .07	
147,040	16,000	.113	0.	0.	
	1,000	.001	0.	— .07	
165,420	18,000	.130	0.	0.	
	1,000	.001	0.	— .07	
183,800	20,000	.147	0.	0.	

Loads applied.	Pounds per square inch.	Compression.	Deflections.		Remarks.
			Horizontal.	Vertical.	
<i>Pounds.</i>		<i>Inch.</i>	<i>Inches.</i>	<i>Inch.</i>	
..... 1,000		.001	.01	— .07	
202,180	22,000	.163	0.	— .02	
..... 1,000		.002	.02	— .07	
211,370	23,000	.172	0.	— .02	
220,560	24,000	.181	0.	— .02	
..... 1,000		.003	.02	— .06	
229,750	25,000	.191	0.	— .03	
..... 1,000		.005	.02	— .06	
238,940	26,000	.200	.02	— .03	
..... 1,000		.007	.03	— .05	
248,130	27,000	.210	.03	— .03	
..... 1,000		.009	.04	— .04	
257,320	28,000	.221	.06	— .03	Elastic limit.
..... 1,000		.011	.05	— .03	
266,510	29,000	.234	.07	— .04	
..... 1,000		.013	.06	— .03	
275,700	30,000	.247	.10	— .07	
..... 1,000		.019	.08	0.	
284,890	31,000	.265	.24	.10	
..... 1,000		.028	.12	.02	
294,080	32,000				Ultimate strength sustained momentarily. Deflects westward. Sustained after above deflection. Sustained after above deflection.
..... 1,000			1.48	— .06	
304,000	1,000		3.20		
..... 1,000			2.87		
314,000			About 5.		

Column deflected finally in the same direction as the initial bend. With deflection of 5 inches at middle, channels had buckled between lattice bars.

No elongation of eyes.

469.



Lattice bars $2\frac{1}{4}'' \times \frac{3}{8}''$. 9-inch spaces alternate.

$$I' = 254.43.$$

$$r^2 = 19.67.$$

Double thickening plates, each $\frac{1}{2}$ inch thick, inside and outside of channels.

Otherwise ends same as 467.

Weight, about 1,410 pounds.

Length, c. to c. of pin holes, 240 inches = 20 feet.

Sectional area, 12.95 square inches.

Gauged length, 181.5 inches.

About .03 $\frac{1}{2}$ inch packing at top of south bolster required to make good bearing. Column not straight; lower channel concave .26 inch; upper channel convex .22 inch, measuring at middle and from outside; straight in other direction.

Loads applied.	Pounds per square inch.	Compression.	Deflections.		Remarks.
			Horizontal.	Vertical.	
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	<i>Inches.</i>	
12, 950	1, 000	0.	0.	0.	
64, 750	5, 000	.014	0.	.15	
	1, 000	0.	0.	.02	
90, 650	7, 000	.024	0.	.18	
	1, 000	0.	0.	.08	
129, 500	10, 000	.042	0.	.21	
	1, 000	0.	0.	.01	
181, 300	14, 000	.068	0.	.24	
	1, 000	0.	0.	.01	
233, 100	18, 000	.093	0.	.27	
	1, 000	.001	0.	.02	
259, 000	20, 000	.106	0.	.29	
	1, 000	.002	0.	.08	
271, 950	21, 000	.112	0.	.31	
284, 900	22, 000	.120	0.	.33	
	1, 000	.002	0.	.06	
297, 850	23, 000	.126	0.	.35	
310, 800	24, 000	.133	0.	.38	
	1, 000	.003	0.	.10	
323, 750	25, 000	.140	0.	.43	
336, 700	26, 000	.146	0.	.49	
	1, 000	.005	0.	.19	
349, 650	27, 000	.154	0.	.62	
362, 600	28, 000	.162	0.	.61	
	1, 000	.008	0.	.46	
375, 200	28, 970				Ultimate strength.
	1, 000		0.	3.48	Sustained after deflection of 3.48 inches.
345, 000					

Column failed by deflecting upward in the direction of the initial bend.

No elongation of eyes.

Pins bent concave .06 inch in 16 inches by the excessive pressure sustained by the upper channel beam after deflection began.

470.

Same size as 469, except in length.

Weight, 1,750 pounds.

Length, c. to c. of pin holes, 300 inches = 25 feet.

Sectional area (channels), 12.95 square inches.

Gauged length, 234.75 inches.

New pins used.

Column straight on east side; convex about .08 inch at middle of west side; concave about .09 inch on under side.

Loads applied.	Pounds per square inch.	Compression.	Deflections.		Remarks.
			Horizontal.	Vertical.	
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
12, 950	1, 000	0.	0.	0.	
64, 750	5, 000	.033	0.	-.12	
	1, 000	0.	0.	0.	
90, 650	7, 000	.055	0.	-.10	
	1, 000	0.	0.	0.	
129, 500	10, 000	.081	0.	-.05	
	1, 000	0.	0.	0.	
181, 300	14, 000	.115	0.	-.05	
	1, 000	.001	0.	0.	
207, 200	16, 000	.132	-.02	-.05	
	1, 000	.001	0.	0.	
233, 100	18, 000	.149	-.02	-.05	

Loads applied.	Pounds per square inch.	Compression.	Deflections.		Remarks.
			Horizontal.	Vertical.	
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
	1,000	.002	0.	— .01	
259,000	20,000	.166	— .03	— .03	
	1,000	.004	0.	— .02	
271,050	21,000	.176	— .05	— .03	
284,900	22,000	.184	— .05	— .03	
	1,000	.005	0.	— .02	
297,850	23,000	.184	— .06	— .03	
310,800	24,000	.203	— .08	— .03	
	1,000	.008	— .01	— .03	
323,750	25,000	.212	— .10	— .03	
336,700	26,000	.224	— .11	— .02	Elastic limit.
	1,000	.012	— .03	— .03	
349,650	27,000	.237	— .13	— .03	
362,600	28,000	.253	— .17	— .03	
	1,000	.024	— .07	— .06	
375,550	29,000		— .23	— .05	
388,500	30,000				Ultimate strength.
	1,000		— 1.20	About — .22	
330,000					Sustained after above deflection.

When strain reached 388,500 pounds the column yielded gradually. It sustained the load about 5 minutes, during which time the horizontal deflection continued to increase.

No elongation of pin holes. Pin in south end bent concave .03 inch in 14 inches; pin in north end bent concave about .07 inch opposite each channel beam, length of pin being 14 inches.

325.—COMPRESSION TESTS OF PHŒNIX COLUMNS.

Circular four-segment columns, cut from 34-feet column.

Length, 30 inches.

External diameter, 8.04 inches.

Diameter through rivets, 10 inches.

Weight, 99 pounds.

Sectional area of metal, 11.61 square inches.

Ultimate crippling strength, 651,000 pounds = 56,070 pounds per square inch.

Column failed by sides bulging at end which had rivets 6 inches apart, and buckling of metal.

The manner in which this column crippled illustrates the necessity of doubling the number of rivets at the ends—that is, of spacing them 3 inches apart after the customary manner of the Phœnix Iron Company.

Strain of 609,000 pounds was reached, and from the behavior of the specimen, supposed to be the *ultimate strength*. Column rested about two hours. The loads were then applied and 651,000 pounds were sustained.

326.—FOUR-SEGMENT CIRCULAR PHŒNIX COLUMN.

Cut from 28-feet Phœnix column, tested November 3, 1879, and considerably bent out of line.

Length, $142\frac{3}{4}$ inches = 11 feet $10\frac{5}{8}$ inches.

Sectional area, 12.181 square inches.

Ultimate crippling strength, 466,000 pounds = 38,256 pounds per square inch.

Column placed in testing machine without support between ends. Ends were carefully brought into the axis of the machine, but there

H. Ex. 12—11

was no attempt to bring them to an even bearing. There was a space of .22 inch between the upper side of one end and the compression platform, and the same space at the under side of the other end, while the column was under a strain of 10,000 pounds. It required about 80 per cent. of the ultimate crippling load to bring the ends to bearing all around the web and flanges. Column bent downward, the riveting not disturbed.

327.—PHOENIX COLUMN.



Cut from column 34 feet long.

External diameter, about 8.04 inches.

Diameter through rivets, 10 inches.

Diameter over flanges, 11.5 inches.

Weight, 102 pounds.

Sectional area, 11.902 square inches.

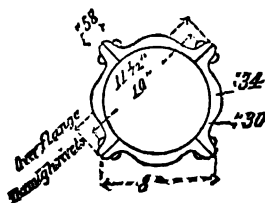
Gauge blocks soldered on (equidistant from ends) 24.016 inches apart.

Loads applied	Contraction.	Set.	Remarks.
Pounds.	Inch.	Inch.	
5,000			Gaugings taken between soldered blocks and not from compression platforms.
200,000	.008		
5,000		0.	
250,000	.012		
300,000	.017		
5,000		0.	
310,000	.018		
320,000			
330,000			
5,000		.001	
340,000		.001	
5,000	.023		
350,000		.001 +	
5,000		.001 +	
360,000		.002	
5,000		.002	
370,000		.003	
5,000		.004	
380,000		.005	
5,000		.006	
390,000		.008	Elastic limit = 36,130 pounds per square inch.
5,000		.021	
400,000		.059	
5,000		.130	
410,000		.183	
5,000		.204	
420,000		.242	
5,000			Ultimate strength = 52,800 pounds per square inch.
500,000			
628,500			

Pressure run from 50,000 pounds to the ultimate load of 628,000 pounds without interruption. Time occupied was about 12 minutes. Column crippled by buckling and bulging of the metal at the middle.

31.—FOUR-SEGMENT PHOENIX COLUMNS.

Two flat ends.



5/8-inch rivets, 6-inch pitch.
 3-inch pitch for 12 inches at each end.
 Total length, over all, 31 feet.
 Total weight, 1,209 pounds.
 Gauged length, 300 inches.
 Sectional area, 11.43 square inches.

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inches.	Inches.	
10,000		0.	0.	
20,000	.0067	0.	0.	
50,000	.0316	— .01	.08	
80,000	.0582	— .02	.10	
100,000	.0767	— .03	.11	
10,000	.0003	0.	.03	
120,000	.0947	— .03	.13	
140,000	.1132	— .04	.14	
150,000	.1222	— .04	.15	
180,000	.1496	— .05	.16	
200,000	.1677	— .05	.18	
10,000	.0008	0.	.05	
210,000	.1777	— .05	.19	
220,500	.1867	— .05	.20	
230,000	.1962	— .05	.20	
240,000	.2052	— .05	.20	
250,000	.2146	— .06	.21	
10,000	.0012	0.	.08	
260,000	.2240	— .07	.24	
270,000	.2332	— .07	.25	
280,000	.2430	— .08	.26	
290,000	.2522	— .10	.30	
300,000	.2610	— .10	.30	
10,000	.0042	— .01	.11	
310,000	.2717	— .11	.33	
320,000	.2810	— .13	.38	
330,000	.2910	— .17	.43	
340,000	.2997	— .23	.55	
350,000	.3062	— .30	.70	
356,000	.....	— .45	1.00	Ultimate strength = 31,150 pounds per square inch.
300,000	.....	— 1.26	3.10	Load sustained with deflections as shown.

Column failed by deflecting upwards and horizontally.

32.—Like 31.

Total length, over all, 31 feet.

Total weight, 1,197 pounds.

Gauged length, 300 inches.

Sectional area, 11.31 square inches.

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inches.</i>	
10,000				
20,000	.0072	0.	.04	
50,000	.0316	0.	.10	
80,000	.0590	0.	.14	
100,000	.0777	0.	.14	
10,000	.0013	0.	.06	
120,000	.0970	0.	.13	
140,000	.1156	— .02	.13	
150,000	.1250	— .02	.13	
180,000	.1532	— .03	.14	
200,000	.1722	— .04	.15	
10,000	.0010	0.	.06	
220,000	.1912	— .05	.16	
240,000	.2100	— .05	.16	
250,000	.2196	— .06	.17	
10,000	.0010	0.	.06	
270,000	.2382	— .07	.18	
280,000	.2487	— .08	.20	
290,000	.2587	— .09	.20	
300,000	.2686	— .09	.21	
10,000	.0037	— .03	.08	
310,000	.2776	— .10	.23	
320,000	.2882	— .10	.25	
330,000	.2987	— .12	.28	
340,000	.3087	— .15	.33	
350,000	.3182	— .18	.37	
10,000	.0102	— .06	.16	
360,000		— .24	.46	
370,000		— .36	.72	
370,500		.42	.80	Ultimate strength = 32,760 pounds per square inch.
10,000		— .75	2.38	Permanent deflections by continuing strain after passing ultimate strength.
277,000		1.40	4.10	Load sustained after the above permanent deflections.

Failed by deflecting upwards and horizontally.

33.—PHOENIX COLUMN.

Original length, 34 feet. Cut off at one end, and bolts substituted in place of extra rivets at end. Two extra bolts used through each flange.

Total length, over all, 31 feet 6 inches.

Total weight, 1,253 pounds.

Gauged length, 300 inches.

Sectional area, 11.66 square inches.

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
10,000				
20,000	.0083	0.	0.	
50,000	.0340	0.	.03	

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
80,000	.0615	0.	.04	
100,000	.0793	0.	.05	
10,000	.0005	0.	0.	
120,000	.0975	0.	.06	
150,000	.1255	0.	.08	
180,000	.1525	— .04	.07	
200,000	.1709	— .04	.08	
10,000	.0025	0.	0.	
220,000	.1899	— .05	.09	
250,000	.2175	— .07	.10	
10,000	.0045	0.	0.	
270,000	.2365	— .08	.11	
280,000	.2460	— .09	.12	
290,000	.2553	— .10	.12	
300,000	.2650	— .11	.13	
10,000	.0079	— .01	.01	
310,000	.2750	— .13	.15	
320,000	.2850	— .17	.17	
330,000	.2945	— .20	.20	
340,000	.3045	— .24	.22	
350,000	.3140	— .30	.30	
360,000	.....	— .42	.40	
363,600	.....	— .70	.62	Ultimate strength = 31,180 pounds per square inch.

Failed by deflecting upwards and horizontally.

34.—Like 33.

Total length, over all, 31 feet 6 inches.

Total weight, 1,245 pounds.

Gauged length, 300 inches.

Sectional area, 11.58 square inches.

Loads.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
10,000	.....	.....	.....
20,000	.0082	0.	0.	
50,000	.0342	— .02	.01	
80,000	.0612	— .04	.02	
100,000	.0792	— .04	.02	
10,000	.0022	— .02	— .02	
120,000	.0977	— .04	.03	
150,000	.1252	— .06	.03	
180,000	.1522	— .06	.04	
200,000	.1707	— .06	.05	
10,000	.0032	— .02	— .02	
220,000	.1892	— .07	.05	
250,000	.2170	— .07	.07	
10,000	.0047	— .02	— .02	
260,000	.2262	— .08	.08	
270,000	.2356	— .08	.09	
280,000	.2452	— .09	.10	
290,000	.2542	— .10	.10	
300,000	.2642	— .11	.11	
10,000	.0077	— .05	0.	
310,000	.2742	— .12	.12	
320,000	.2836	— .13	.13	
330,000	.2937	— .16	.17	
340,000	.3032	— .20	.20	
350,000	.....	— .22	.23	
360,000	.....	— .28	.31	
370,000	.....	— .42	.50	
373,100	.....	— .60	.80	Ultimate strength = 32,220 pounds per square inch.

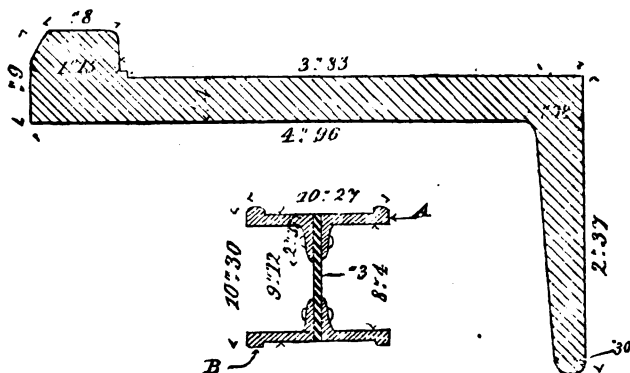
Failed by deflecting upwards and horizontally.

1058.—COMPRESSION OF STEEL COLUMN.

(Sent to arsenal by W. Sooy Smith, Engineer of Glasgow Bridge.)

Tested with two flat ends.

Length, 43.1 inches.

 $\frac{3}{4}$ -inch steel rivets spaced 6 inches apart.

Gauged length, 30 inches.

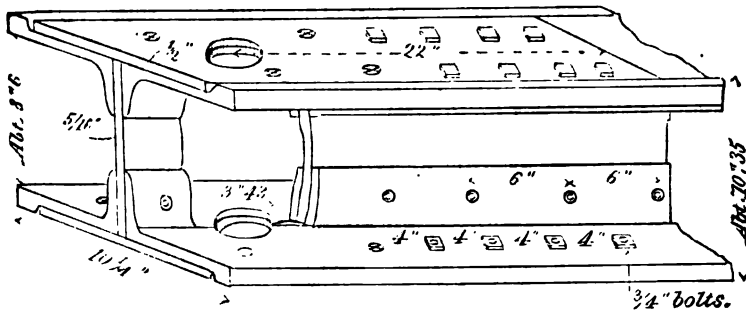
Sectional area, 15.28 square inches.

Loads applied.	Compression.	Set.	Remarks.
Pounds.	Inch.	Inch.	
10,000			
50,000	.0037	0.	
10,000			
100,000	.0072	0.	
10,000			
150,000	.0110	— .0003	
10,000			
200,000	.0142	— .0003	
10,000			
220,000	.0152		
250,000	.0177		
10,000		— .0004	Apparent elongation of specimen due probably to disturbance of gauge.
270,000	.0187		
300,000	.0212	— .0008	
10,000			
50,000			Rested over night.
11,500			Pressure found in morning.
300,000	.0216		
320,000	.0230		
340,000	.0242		
350,000	.0247		
10,000		0.	
370,000	.0262		
390,000	.0277		
400,000	.0282		
10,000		.0002	
420,000	.0297		
440,000	.0312		
450,000	.0317		
10,000		.0007	
470,000	.0332		
490,000	.0347		
500,000	.0356		
10,000		.0012	
520,000	.0372		
540,000	.0387		
550,000	.0396		
10,000		.0020	
718,000			Ultimate strength = 47,055 pounds per square inch.

Failed by buckling flanges at A and B.

30.—STEEL COLUMN.

(American Bridge Company.)



Column cut off at one end to get within capacity of testing machine, and eye plates secured by bolts in lieu of rivets.

For detailed measurements of angles see 1058.

End not shown by sketch had pin hole 3.94 inches in diameter, and eye plates $\frac{1}{2}$ inch in thickness secured to column by ten $\frac{3}{4}$ inch rivets, 4-inch pitch.

Total length, e. to c. of pin holes, 30 feet 0.44 inch.

Gauged length, 300 inches.

Total weight, 1,700 pounds.

Sectional area, 15.28 square inches.

Loads applied.	Compression.	Deflections.		Remarks.
		Horizontal.	Vertical.	
Pounds.	Inch.	Inches.	Inch.	
10,000	.....	0.	0.	
20,000	.0065	0.	0.	
50,000	.0275	— .03	0.	
80,000	.0485	— .06	0.	
100,000	.0625	— .09	0.	
10,000	.0025	0.	— .02	
130,000	.0835	— .13	0.	
150,000	.0975	— .17	0.	
160,000	.1045	— .19	0.	
170,000	.1115	— .10	0.	Deflection instrument thought to have been accidentally disturbed.
180,000	.1185	— .12	0.	
190,000	.1259	— .14	0.	
200,000	.1325	— .17	0.	
10,000	.0035	— .02	— .04	
210,000	.1405	— .27	— .04	
220,000	.1475	— .31	— .04	
230,000	.1555	— .35	— .04	
240,000	.1625	— .40	— .05	
250,000	.1700	— .47	— .05	
260,000	.1775	— .57	— .06	
10,000	.0030	0.	— .05	
260,000	.....	— .50	— .07	
270,000	.....	— .60	— .07	
280,000	.....	— .87	— .07	Snapping sound heard.
290,000	.....	— 1.30	.....	Ultimate strength = 18,980 pounds per square inch.
10,000	.....	— .06	— .10	
Rested over night under load of 200,000 pounds.				
298,000	Load sustained after 14 hours' rest, horizontal deflection being —.95 inch.			
	Column then suddenly sprung, increasing the horizontal deflection to —2 inches.			
10,000	.....	— .06	— .07	Permanent deflection.
274,800	Sustained after above deflections.			

Column failed by deflecting horizontally, the pins being vertical.

492.—COMPRESSIVE TEST OF KELLOGG LATTICE COLUMN.

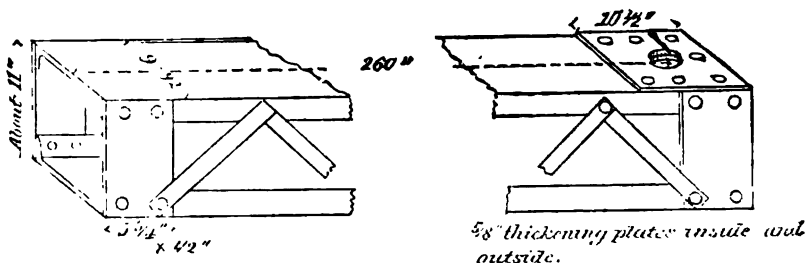
Column originally 23 feet 9.3 inches from flat end to center of pin hole. Pin hole 3 inches diameter.

Sectional area of channels, 17.65 square inches.

With $\frac{1}{4}$ -inch thickening plates, it was loaded with 500,000 pounds. The channel and plates cracked apart in front of the pin.

Column was removed from the machine and end cut off beyond fracture in the channels. $\frac{1}{4}$ -inch thickening plates put on and pin hole bored to 3.915 inches in diameter. Wrought-iron pin used. Loaded to 537,000 pounds when cast-iron bolsters burst, the wrought-iron pin having become seriously bent. The column was apparently not injured.

Column again tested with details as shown by sketch.



Inertia perpendicular to web. Diameter of pin hole, 4.52 inches.

$$I = 230.61.$$

$$r^2 = 13.07.$$

Length from flat end to center of the pin hole, 260 inches = 21 feet 8 inches.

Gauged length, 224 inches.

Weight, 1,534 pounds.

Sectional area (channels), 17.65 square inches.

Counterweight at middle.

Pin hole not bored at right angles to axis. Packing required at top of pin end.

Loads applied.	Pounds per square inch.	Compression.	Deflections.		Remarks.
			Horizontal.	Vertical.	
<i>Pounds.</i>		<i>Inch.</i>	<i>Inches.</i>	<i>Inch.</i>	
17,650	1,000		0.	0.	
88,250	5,000	.028	.01	.04	
123,550	7,000	.044	.03	.04	
176,500	10,000	.068	.05	.05	
211,800	12,000	.083	.06	.05	
247,100	14,000	.099	.07	.05	
282,400	16,000	.115	.07	.05	
317,700	18,000	.131	.07	.06	
353,000	20,000	.147	.09	.06	
370,650	21,000	.155	.09	.07	
388,300	22,000	.163	.09	.07	
405,950	23,000	.171	.09	.08	
423,600	24,000	.178	.09	.09	

Loads applied.	Pounds per square inch.	Compression.	Deflections.		Remarks.
			Horizontal.	Vertical.	
Pounds.		Inch.	Inch.	Inch.	
441,250	1,000	0.	.01	0.	
458,900	25,000	.186	.11	.09	
	26,000	.195	.11	.09	
	1,000	0.	.03	0.	
					Rested over night under 200,000 pounds. In the morning stood 185,000 pounds.
	1,000	0.	0.	0.	
476,550	27,000	.201	.09	.09	
494,260	28,000	.209	.11	.09	
	1,000	0.	.02	0.	
511,850	29,000	.217	.11	.09	
					500,000 pounds slips upper thickening plate .06 inch. Plate recovers .02 inch when load is reduced to initial strain of 1,000 pounds per square inch.
529,500	30,000	.225	.11	.09	
	1,000	0.	.03	0.	
547,150	31,000	.234	.13	.09	
	1,000	.002	.04	0.	
564,800	32,000	.249	.15	.14	
	1,000	.014	.06	.02	
581,000	32,320				Ultimate strength.
	1,000		.47	.24	
539,000			.94	.55	Sustained after above deflection.
	1,000		.96	.32	
514,000			1.70	.65	Sustained after above deflection.

Column bent eastward and upward. Pin holes elongated about .03 inch.

Wrought-iron pin of $4\frac{1}{2}$ inches diameter bent .025 inch concave in 18 inches.

Wrought-iron bolsters 4 inches long used, pin taking bearings close to column.

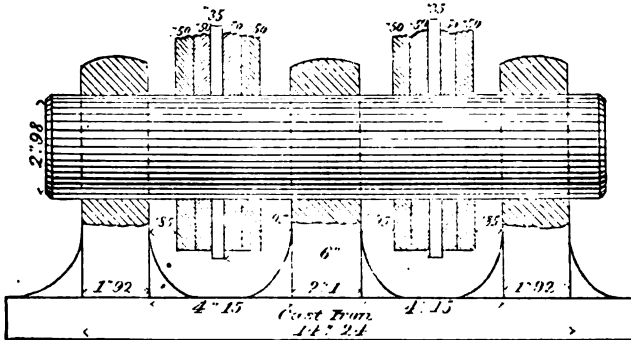
TENSILE TESTS OF WROUGHT IRON.

Tabulated results obtained with single and double refined rolled bars.

[Bars from the Elmira Iron and Steel Rolling Mill Company; distinguishing letter, L. Bars from the Passaic Rolling Mill Company; distinguishing letter, S.]

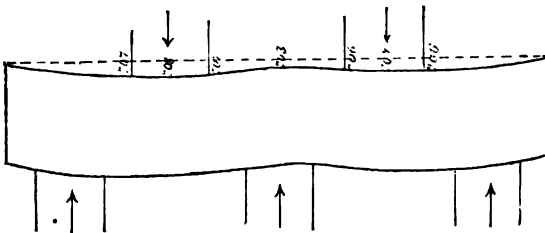
No of test.	Mark on bar.	Kind of iron.	Dimensions.		Elastic limit per square inch.	Ultimate strength per square inch.	Elongation in 80 inches.	Contraction of area.	Appearance of fracture.
			Width.	Thickness.					
			Inches.	Inches.	Pounds.	Pounds.	Per cent.	Per cent.	
773	L 1	Single refined	3.03	1.01	28,500	52,710	18.4	33.3	Fibrous, 95 per cent; granular, 5 per cent.
774	L 2	do	3.03	1.01	28,500	53,680	16.4	38.0	Fibrous, 92 per cent; granular, 8 per cent.
775	L 3	do	3.03	1.01	28,000	52,080	21.4	34.6	Fibrous, 95 per cent; granular, 5 per cent.
776	L 4	do	3.03	1.01	28,000	51,440	15.0	37.3	Fibrous, 90 per cent; granular, 10 per cent.
777	L 201	Double refined	3.03	1.01	30,000	53,060	13.2	37.8	Fibrous, 100 per cent.
778	L 202	do	3.03	1.01	30,000	52,640	16.2	37.5	Fibrous, 85 per cent; granular, 15 per cent.
779	L 203	do	3.03	1.01	32,500	53,900	16.5	37.5	Fibrous, 100 per cent.
780	L 204	do	3.03	1.01	32,500	54,840	13.4	34.8	Fibrous, 100 per cent.
781	L 5	Single refined	3.03	1.01	27,500	50,500	14.5	37.0	Fibrous, 95 per cent; granular, 5 per cent.
782	L 6	do	3.04	1.28	27,500	49,520	17.3	32.5	Fibrous, 70 per cent; granular, 30 per cent.
783	L 7	do	3.03	1.27	27,000	49,200	18.8	32.2	Fibrous, 85 per cent; granular, 5 per cent.
784	L 205	Double refined	3.02	1.26	27,500	51,250	17.6	34.2	Fibrous, 80 per cent; granular, 20 per cent.
785	L 206	do	3.03	1.26	27,500	50,800	21.4	31.1	Fibrous, slightly granular.
786	L 207	do	3.02	1.25	27,500	51,030	21.4	31.0	Do.
787	L 11	Single refined	3.02	1.01	28,500	53,300	13.3	35.3	Do.
788	L 12	do	3.05	1.01	28,500	52,000	16.0	35.1	Fibrous, 100 per cent.
789	S 13	do	3.05	1.00	28,500	47,050	9.0	32.0	Do.
790	S 21	do	3.05	1.00	28,500	51,150	22.0	32.5	Do.
791	S 211	Double refined	3.05	1.00	28,500	51,110	22.0	34.1	Do.
792	S 212	do	3.05	1.02	28,500	51,490	22.5	30.2	Do.
793	S 213	do	3.08	1.26	28,000	49,700	17.1	19.2	Fibrous, 85 per cent; granular, 15 per cent.
1,000	L 15	Single refined	3.08	1.26	21,000	49,290	15.7	85	Fibrous, 85 per cent; granular, 15 per cent.
1,001	L 16	do	3.09	1.26	21,300	48,740	14.3	17.3	Fibrous, 80 per cent; granular, 20 per cent.
1,002	L 17	do	3.05	1.26	21,300	49,980	19.1	23.6	Fibrous, 95 per cent; granular, 5 per cent.
1,003	S 215	Double refined	3.06	1.26	27,000	50,770	20.7	39.6	Fibrous, 100 per cent.
1,004	S 216	do	3.06	1.26	27,000	50,770	20.7	39.6	Fibrous, 100 per cent.
1,005	S 217	do	3.06	1.25	27,000	51,340	19.3	35.2	Do.

BENDING OF WROUGHT-IRON PIN.



Sketch showing cast-iron bolster, wrought-iron pin, and channels with thickening plates in section.

DISTORTION OF PIN AFTER TEST OF COLUMN.



Pin bent in experiment No. 470.

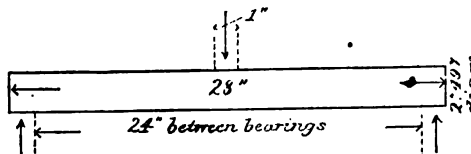
Maximum load on pin, 388,500 pounds.

In addition to bending, the pin was indented about .005 inch by the channel bars and thickening plates.

TRANSVERSE STRENGTH OF WROUGHT-IRON PINS.

Pins supported at the ends and loaded at the middle. Specimen prepared from Phoenix and Pencoyd bars.

The 2½-inch pins loaded at middle over 1-inch bearing surface. Semi-circular seats at middle and ends.



673.—PHOENIX IRON.

Turned down from 2½ inches rough bar.

Loads applied.	Deflection at middle.	Permanent set at middle.	Remarks.
Pounds.	Inch.	Inch.	
500			Initial load.
1,000	.003		
1,500	.006		
2,000	.009		

Loads applied.	Deflection at middle.	Permanent set at middle.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
2,500	.0122		
3,000	.015		
500		0.	
3,500	.0178		
4,000	.0203		
4,500	.023		
5,000	.025		
500		0.	
5,500	.0275		
6,000	.030		
6,500	.033		
7,000	.0355		
7,500	.0383		
8,000	.0408		
8,500	.0435		
9,000	.0461		
9,500	.049		
10,000	.0517		
500		0.	
10,500	.0545		
11,000	.0575		Elastic limit.
11,500	.061		
500		.0015	
12,000	.0655		
12,500	.070		
13,000	.0783		
500		.0095	
13,500	.086		
14,000	.148		
14,500	.208		
15,000	.270		
16,000	.404		
18,000	.78		
20,000	1.27		

Middle bearing, 1 inch wide, indented pin .007 inch.

674.—2.75-inch PHOENIX BAR.

Reduced in lathe to 2.497 inches diameter.

Sectional area, 4.9 square inches.

Supported and loaded same as 673.

Loads applied.	Deflection at middle.	Permanent deflection at middle.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
500			
1,000	.003		
5,000	.028		
8,000	.042		
500		0.	
9,000	.0475		
10,000	.0528		Elastic limit.
500		.0005	
10,500	.0565		
11,000	.0597		
500		.0022	
11,500	.0635		
12,000	.068		
12,500	.0736		
13,000	.0822		
500		.014	
13,500	1.345		
14,000	.177		
15,000	.314		
15,000	.329		Deflection after sustaining load 5 minutes.

Middle bearing indented pin about .002 inch.

After the elastic limit of the pins is passed, higher loads cause a gradual increased deflection. The metal yields, however, slowly; hence

the deflections caused by loads exceeding the elastic limit are to a certain extent approximate deflections. In all such cases, had the load been sustained longer, the deflections would have been larger. Enough time is allowed for the metal to yield a large per cent. of its total deflection before the gaugings are taken.

675.—ROUND BAR OF PHOENIX IRON.

22 inches long by 25 inches diameter. Turned down from 4.75 inches rough bar. Tested 18 inches between supports. Middle bearing, 1 inch wide.

Loads applied.	Deflection at middle.	Permanent deflection at middle.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
500			
1,000	.0015		
5,000	.0119		
8,000	.0190		
500		0.	
9,000	.0213		
10,000	.0238		
500		0.	
11,000	.0260		
500		.0002	
11,500	.0273		
12,000	.0283		
500		.0002	
12,500	.0297		
13,000	.0309		
13,500	.0321		
14,000	.0335		
500		.0005	
14,500	.0348		
15,000	.0360		
15,500	.0375		
16,000	.0391		
500		.0018	
16,500	.0410		
17,000	.0429		
500		.0032	
17,500	.0460		
18,000	.0482		
500		.006	
18,500	.0508		Deflection measured immediately.
18,500	.0529		Deflection measured after 6 minutes.
19,000	.0590		
500		.0150	
20,000	.1210		
20,000	.1315		After sustaining load 15 minutes.
20,000	.1350		After sustaining load 30 minutes.
500		.0870	Rested one hour.
20,000	.1370		
20,500	.1400		
21,000	.1600		

Pin indented by middle bearing .0025 inch.

676.—PIN MADE OF PENCOYD IRON.

Same dimensions and tested the same as 675.

Loads applied.	Deflection at middle.	Permanent deflection at middle.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
500			
5,000	.0127		
8,000	.0168		
10,000	.0248		
500		.0008	

Loads applied.	Deflection at middle.	Permanent deflection at middle.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
10,500	.0260	.....
11,000	.0273	.....
500	.....	.0009	
11,500	.0288	.....
12,000	.0304	.....
500	.....	.0015	
12,500	.0319	.....
13,000	.0333	.....
13,500	.0350	.....
14,000	.0373	.....
500	.....	.0038	
14,500	.0405	.....
15,000	.0434	.....
15,500	.0485	.....
16,000	.0538	.....
500	.....	.0160	
16,500	.0627	.....
17,000	.0728	.....
18,000	.1000	.....

Indentation at middle bearing just perceptible; less than .001 inch.

677.—PIN MADE OF PHOENIX IRON.

Pin 16 inches long \times by 2.50 inches diameter. Loaded at middle.
Supported at ends 12 inches apart.
Turned down from 2.75 inches rough bar.

Loads applied.	Deflection at middle.	Permanent deflection at middle.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
500	.....	.....
5,000	.0047	.....
8,000	.0075	.....
10,000	.0090	.....
500	.....	0.	Rested over night, 14 hours.
11,000	.0100	.....
11,500	.0106	.....
12,000	.0109	.....
500	.....	.0003	
13,000	.0117	.....
13,500	.0120	.....
14,000	.0126	.....
500	.....	.0003	
14,500	.0129	.....
15,000	.0133	.....
15,500	.0137	.....
16,000	.0141	.....
16,500	.0146	.....
17,000	.0149	.....
500	.....	.0004	
17,500	.0154	.....
18,000	.0158	.....
18,500	.0162	.....
19,000	.0167	.....
500	.....	.0005	
19,500	.0170	.....
20,000	.0176	.....
20,500	.0179	.....
21,000	.0184	.....
500	.....	.0007	
21,500	.0188	.....
22,000	.0193	.....
22,500	.0197	.....
23,000	.0202	.....
23,500	.0207	.....
24,000	.0212	.....
24,500	.0217	.....
25,000	.0225	.....

Loads applied.	Deflection at middle.	Permanent deflection at middle.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
500		.0016	
25,500	.0232		
26,000	.0237		
26,500	.0247		
27,000	.0255		
500		.003	
27,500	.0266		
28,000	.0275		
28,500	.0289		
29,000	.0306		
500		.0061	
29,500	.0337		
30,000	.0367		
500		.0127	

Indentation at middle bearing not perceptible.

678.—PENCOYD IRON.

Pin of same dimensions as 677. Supported at middle; end supports 12 inches apart.

Loads applied.	Deflection at middle.	Permanent deflection at middle.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
500			
5,000	.0048		
8,000	.0078		
10,000	.0096		
500		.0003	
11,000	.0103		
12,000	.0112		
500		.0004	
13,000	.0120		
14,000	.0129		
500		.0005	
15,000	.0138		
16,000	.0148		
17,000	.0157		
500		.0008	
17,500	.0160		
18,000	.0167		
18,500	.0170		
19,000	.0177		
500		.0011	
19,500	.0183		
20,000	.0190		
20,500	.0197		
21,000	.0202		
500		.0023	
21,500	.0212		
22,000	.0220		
22,500	.0230		
23,000	.0243		
23,500	.0257		
24,000	.0267		
24,500	.0288		
25,000	.0308		
500		.0100	
25,500	.0328		
26,000	.0357		
27,000	.0437		
500		.0217	

Indentation of pin at middle bearing barely perceptible; less than .001 inch.

NOTE.—The yielding of the pins after the elastic limit is passed takes place very sluggishly; so sluggishly that to obtain approximately the true deflections about one half of a day is required to test each.

679.—PENCOYD IRON.

2.75 inches rough bar turned down to 2.50 inches diameter.

Length of bar, 10 inches.

Distance between end supports, 6 inches.

Loaded at middle. Bearing, 1 inch wide.

Loads applied.	Deflection at middle.	Permanent deflection at middle.	Remarks.
Pounds.	Inch.	Inch.	
500	.....	.....
5,000	.0013	.....
8,000	.0021	.....
10,000	.0023	.....
12,000	.0039	.....
500	.....	.0001	
13,000	.0031	.....
14,000	.0032	.....
15,000	.0033	.....
16,000	.0034	.....
17,000	.0038	.....
500	.....	.0001	
18,000	.0041	.....
19,000	.0041	.....
20,000	.0043	.....
21,000	.0043	.....
500	.....	.0001	
22,000	.0046	.....
23,000	.0050	.....
500	.....	.0001	
24,000	.0051	.....
25,000	.0052	.....
26,000	.0053	.....
27,000	.0054	.....
28,000	.0058	.....
29,000	.0060	.....
30,000	.0061	.....
500	.....	.0001	
31,000	.0063	.....
32,000	.0063	.....
33,000	.0066	.....
34,000	.0070	.....
35,000	.0071	.....
36,000	.0072	.....
37,000	.0073	.....
38,000	.0074	.....
39,000	.0080	.....
500	.....	.0003	
40,000	.0081	.....
41,000	.0082	.....
42,000	.0083	.....
43,000	.0087	.....
44,000	.0089	.....
45,000	.0091	.....
500	.....	.0007	
46,000	.0093	.....
47,000	.0097	.....
48,000	.0101	.....
500	.....	.0012	Rested one hour.
49,000	.0103	.....
50,000	.0109	.....
500	.....	.0018	
51,000	.0114	.....
52,000	.0120	.....
53,000	.0123	.....
54,000	.0130	.....
55,000	.0133	.....
500	.....	.0033	
56,000	.0143	.....
57,000	.0151	.....
58,000	.0158	.....
59,000	.0168	.....
60,000	.0180	.....
500	.....	.0070	
65,000	.0251	.....	After sustaining load 5 minutes longer.
65,000	.0261	.....	After sustaining load 10 minutes longer.
65,000	.0263	.....
500	.....	.0144	

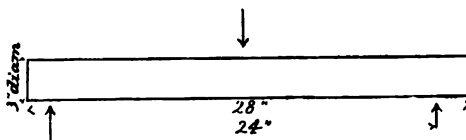
Pin indented at middle bearing .003 inch.

680.—PENCOYD BAR.

Same description as 679.

Loads applied.	Deflection at middle.	Permanent deflection at middle.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
500			
5,000	.0013		
10,000	.0027		
12,000	.0030		
500		0.	
15,000	.0038		
17,000	.0041		
500		.0001	
19,000	.0043		
21,000	.0049		
500		.0001	
23,000	.0052		
25,000	.0056		
28,000	.0061		
30,000	.0064		
500		.0002	
32,000	.0070		
34,000	.0072		
36,000	.0077		
38,000	.0080		
39,000	.0082		
500		.0007	
40,000	.0084		
41,000	.0089		
42,000	.0090		
43,000	.0092		
44,000	.0093		
45,000	.0099		
500		.0012	
46,000	.0102		
47,000	.0104		
48,000	.0110		
500		.0019	
49,000	.0113		
50,000	.0119		
500		.0023	
51,000	.0123		
52,000	.0130		
53,000	.0133		
54,000	.0140		
55,000	.0149		
500		.0049	Rested over night; 14 hours.
56,000	.0150		Gaugings disturbed; hence deflection may be .0150 \pm inch.
57,000	.0152		
58,000	.0158		Subsequent gaugings apparently show increased stiffness, due to resting of the metal.
59,000	.0168		
60,000	.0184		
500		.0073	

693.—PHOENIX IRON.



3.25 inches rough bar of Phoenix iron, turned down to 3 inches diameter.

Supported at ends 24 inches apart.

H. Ex. 12—12

Loaded at middle. Plunger, $1\frac{1}{8}$ inch face. Semicircular end seats.
 Rounded corners. $\frac{1}{4}$ -inch radius.
 Deflections and set measured at the middle.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000	.....	.....
3,000	.0061	.....
5,000	.0118	.....
8,000	.0197	.....
10,000	.0249	.....
1,000	.....	.0008	
11,000	.0278	.....
12,000	.0300	.....
13,000	.0329	.....
14,000	.0353	.....
15,000	.0382	.....
1,000	.....	.0012	
16,000	.0412	.....
17,000	.0442	.....
18,000	.0479	.....
1,000	.....	.0032	
19,000	.0532	.....
20,000	.0623	.....
1,000	.....	.0132	
21,000	.0850	.....
22,000	.1260	.....
1,000	.....	.0722	

694.—PHENIX BAR.

Same description, and tested in same manner as 693.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000	.....	.....
3,000	.0059	.....
5,000	.0116	.....
8,000	.0196	.....
10,000	.0249	.....
1,000	.....	.0002	
11,000	.0278	.....
12,000	.0301	.....
13,000	.0329	.....
14,000	.0358	.....
15,000	.0386	.....
1,000	.....	.0010	
16,000	.0414	.....
16,500	.0431	.....
17,000	.0449	.....
17,500	.0469	.....
18,000	.0497	.....
1,000	.....	.0043	
18,500	.0527	.....
19,000	.0552	.....
19,500	.0597	.....
20,000	.0693	.....
1,000	.....	.0195	
21,000	.0833	.....
22,000	.1231	.....
1,000	.....	.0681	

695.—PHOENIX IRON.

Rough bar of $3\frac{1}{4}$ inches diameter, turned down to 3 inches diameter. Length, 16 inches. End supports 12 inches apart.

Loaded at middle. Plunger, $1\frac{1}{8}$ inch face, bearing on semicylindrical surface.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000	.....	.....
5,000	.0017	.....
10,000	.0041	.....
12,000	.0048	.....
15,000	.0061	.....
1,000	.....	.0002	
18,000	.0072	.....
20,000	.0081	.....
21,000	.0084	.....
22,000	.0090	.....
23,000	.0093	.....
24,000	.0096	.....
25,000	.0101	.....
26,000	.0104	.....
27,000	.0110	.....
28,000	.0112	.....
29,000	.0117	.....
30,000	.0122	.....
1,000	.....	.0004	
31,000	.0126	.....
32,000	.0132	.....
33,000	.0134	.....
34,000	.0141	.....
35,000	.0144	.....
36,000	.0150	.....
37,000	.0154	.....
38,000	.0160	.....
39,000	.0165	.....
40,000	.0174	.....
1,000	.....	.0018	
41,000	.0183	.....
42,000	.0191	.....
43,000	.0202	.....
44,000	.0216	.....
45,000	.0234	.....
1,000	.....	.0062	
46,000	.0256	.....
47,000	.0278	.....
48,000	.0312	.....
49,000	.0360	.....
50,000	.0414	.....
1,000	.....	.0223	

696.—PHOENIX IRON.

Same description as 695. 12 inches between end supports.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000	.....	.....
5,000	.0020	.....
10,000	.0042	.....
12,000	.0051	.....
15,000	.0062	.....
1,000	.....	.0002	
18,000	.0074	.....
20,000	.0083	.....
23,000	.0094	.....
25,000	.0102	.....
28,000	.0114	.....
30,000	.0123	.....
1,000	.....	.0005	

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
32,000	.0132	.....
35,000	.0145	.....
36,000	.0152	.....
37,000	.0159	.....
38,000	.0163	.....
39,000	.0171	.....
40,000	.0179	.....
1,000	.....	.0023	
41,000	.0188	.....
42,000	.0196	.....
43,000	.0212	.....
44,000	.0231	.....
45,000	.0253	.....
1,000	.....	.0081	
46,000	.0288	.....
47,000	.0322	.....
48,000	.0361	.....
49,000	.0412	.....
50,000	.0464	.....
1,000	.....	.0272	

697.—PENCOYD IRON.

3.75 inches rough bar turned down to 3 inches diameter.

Length, 10 inches.

Loaded at middle.

6 inches between end supports.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000	.....	.....
5,000	.0008	.....
10,000	.0018	.....
15,000	.0025	.....
20,000	.0028	.....
25,000	.0036	.....
30,000	.0040	.....
1,000	.....	.0005	
35,000	.0047	.....
40,000	.0052	.....
45,000	.0057	.....
50,000	.0064	.....
1,000	.....	.0008	
52,000	.0067	.....
54,000	.0069	.....
55,000	.0069+	.....
57,000	.0070	.....
59,000	.0073	.....
60,000	.0074	.....
1,000	.....	.0009	
62,000	.0077	.....
64,000	.0079	.....
65,000	.0080	.....
1,000	.....	.0009	
66,000	.0080+	.....
67,000	.0082	.....
68,000	.0084	.....
69,000	.0085	.....
70,000	.0087	.....
1,000	.....	.0011	
71,000	.0088	.....
72,000	.0090	.....
73,000	.0090+	.....
74,000	.0091	.....
75,000	.0092	.....
76,000	.0094	.....
77,000	.0096	.....
78,000	.0098	.....
79,000	.0099	.....
80,000	.0099+	.....
81,000	.0100	.....

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
82,000	.0101	.....
83,000	.0104	.....
84,000	.0106	.....
85,000	.0108	.....
1,000	.....	.0018	
86,000	.0109	.....
88,000	.0111	.....
90,000	.0116	.....
92,000	.0119	.....
94,000	.0121	.....
96,000	.0127	.....
97,000	.0129	.....
98,000	.0130	.....
99,000	.0132	.....
100,000	.0136	.....
1,000	.....	.0035	
101,000	.0140	.....
102,000	.0141	.....
103,000	.0144	.....
104,000	.0149	.....
105,000	.0150	.....
107,000	.0156	.....
109,000	.0160	.....
100,000	.0162	.....
1,000	.....	.0057	
112,000	.0171	.....
114,000	.0179	.....
116,000	.0185	.....
118,000	.0195	.....
120,000	.0206	.....
1,000	.....	.0091	
122,000	.0218	.....
124,000	.0228	.....
125,000	.0240	.....
1,000	.....	.0120	

698.—PENCOYD IRON.

Same description as 697.

End bearings 6 inches apart; middle bearing $1\frac{1}{2}$ inches wide.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000	.....	.....
10,000	.0015	.....
20,000	.0028	.....
30,000	.0038	.....
1,000	.....	.0002	
40,000	.0049	.....
50,000	.0059	.....
1,000	.....	.0004	
55,000	.0064	.....
60,000	.0070	.....
65,000	.0077	.....
70,000	.0080	.....
1,000	.....	.0008	
75,000	.0088	.....
78,000	.0091	.....
80,000	.0095	.....
82,000	.0098	.....
84,000	.0100	.....
85,000	.0101	.....
1,000	.....	.0017	
88,000	.0107	.....
90,000	.0110	.....
92,000	.0116	.....
94,000	.0119	.....
96,000	.0122	.....
98,000	.0128	.....
100,000	.0133	.....
1,000	.....	.0036	
102,000	.0140	.....

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
104,000	.0146	Rested over night, 14 hours.
106,000	.0151	.....
108,000	.0157	.....
110,000	.0165	.....
1,000	.....	.0058
112,000	.0167	.....
114,000	.0168	.....
116,000	.0177	.....
118,000	.0190	.....
120,000	.0208	.....
1,000	.....	.0093
122,000	.0228	.....
124,000	.0240	.....
125,000	.0250	.....
1,0000130	

716.—PENCYD IRON.

3.75 inches rough bar turned down to 3.495 inches diameter.

Length, 29 inches.

End supports 24 inches apart.

Loaded at middle.

Width of bearing, $1\frac{1}{2}$ inches.

Semicircular bearings. Good fit. End bearings rounded with $\frac{1}{4}$ -inch radius.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000	.....	.....
5,000	.0074	.....
1,000	.....	0.	
6,000	.0094	.....
1,000	.....	0.	
10,000	.0156	.....
1,000	.....	.0004	
15,000	.0228	.....
1,000	.....	.0005	
20,000	.0302	.....
22,000	.0333	.....
25,000	.0383	.....
1,000	.....	.0018	
26,000	.0407	.....
27,000	.0427	.....
28,000	.0448	.....
29,000	.0472	.....
30,000	.0513	.....
1,000	.....	.0077	
31,000	.0555	.....
32,000	.0608	.....
33,000	.0655	.....
34,000	.0782	.....
35,000	.0824	.....
1,000	.....	.0310	
38,000	.1264	.....
40,000	.1681	.....
1,000	.....	.1085	

717.—PENCOYD IRON.

Finished diameter, 3.495 inches.
Same description as 716.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000	.....	.....
5,000	.0075	.....
1,000	.....	0.	
6,000	.0093	.....
1,000	.....	.0001	
10,000	.0150	.....
1,000	.....	.0001	
15,000	.0233	.....
20,000	.0310	.....
1,000	.....	.0011	
22,000	.0349	.....
25,000	.0413	.....
1,000	.....	.0042	
26,000	.0439	.....
27,000	.0465	.....
28,000	.0492	.....
29,000	.0529	.....
30,000	.0553	.....
1,000	.....	.0120	
31,000	.0620	.....
32,000	.0663	.....
33,000	.0725	.....
34,000	.0814	.....
35,000	.0923	.....
1,000	.....	.0399	

718.—PENCOYD IRON.

3.75 inches rough bar turned down to 3.495 inches diameter.
Length, 17 inches.
12 inches between end bearings.
Bearings of same description as 716.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000	.....	.....
5,000	.0019	.....
1,000	.....	0.	
10,000	.0039	.....
1,000	.....	.0001	
15,000	.0058	.....
20,000	.0071	.....
25,000	.0083	.....
30,000	.0099	.....
1,000	.....	.0005	
35,000	.0109	.....
40,000	.0121	.....
45,000	.0135	.....
1,000	.....	.0009	
50,000	.0149	.....
1,000	.....	.0010	
55,000	.0163	.....
56,000	.0168	.....
57,000	.0169	.....
58,000	.0172	.....
1,000	.....	.0019	Rested over night.
1,000	.....	.0018	
59,000	.0177	.....
60,000	.0179	.....
61,000	.0181	.....
62,000	.0187	.....
63,000	.0191	.....
64,000	.0197	.....
65,000	.0199	.....

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
66,000	.0206	.....
67,000	.0212	.....
68,000	.0217	.....
69,000	.0221	.....
70,000	.0228	.....
1,000	.....	.0049	
71,000	.0240	.....
72,000	.0248	.....
73,000	.0256	.....
74,000	.0261	.....
75,000	.0269	.....
1,000	.....	.0081	
76,000	.0289	.....
77,000	.0293	.....
78,000	.0306	.....
79,000	.0317	.....
80,000	.0330	.....
1,000	.....	.0129	

719.—PENCOYD IRON.

Same description as 718.
 12 inches between end bearings.
 Diameter of pin, 3.495 inches.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000	.....	.....
5,000	.0020	0.	
1,000	.....	.....
10,000	.0043	.....
1,000	.....	.0004	
20,000	.0074	.....
30,000	.0100	.....
1,000	.....	.0005	
35,000	.0113	.....
40,000	.0124	.....
45,000	.0136	.....
50,000	.0150	.....
1,000	.....	.0012	
52,000	.0156	.....
54,000	.0163	.....
55,000	.0166	.....
57,000	.0173	.....
59,000	.0179	.....
60,000	.0184	.....
1,000	.....	.0024	
61,000	.0189	.....
62,000	.0194	.....
63,000	.0197	.....
64,000	.0203	.....
65,000	.0206	.....
66,000	.0212	.....
67,000	.0216	.....
68,000	.0223	.....
69,000	.0229	.....
70,000	.0235	.....
1,000	.....	.0055	
71,000	.0247	.....
72,000	.0254	.....
73,000	.0262	.....
74,000	.0266	.....
75,000	.0275	.....
1,000	.....	.0085	
76,000	.0291	.....
77,000	.0302	.....
78,000	.0313	.....
79,000	.0323	.....
80,000	.0340	.....
1,000	.....	.0134	

720.—PHENIX IRON.

3.75 inches rough bar turned down to 3.496 inches diameter.

Length, 11 inches.

End bearings 6 inches apart.

Corners rounded. $\frac{1}{4}$ inch radius.

Loaded at middle.

Bearing $1\frac{1}{2}$ inches wide.

Semicircular bearings having a close fit on pin.

Loads applied.	Deflection.	Set.	Remarks.
Pounds.	Inch.	Inch.	
1,000			
5,000	.0011		
1,000		0.	
10,000	.0022		
1,000		.0005	
20,000	.0037		
30,000	.0046		
40,000	.0053		
50,000	.0061		
1,000		.0009	
60,000	.0068		
70,000	.0077		
80,000	.0082		
90,000	.0083		
100,000	.0091		
1,000		.0009	
105,000	.0097		
107,000	.0098		
109,000	.0099		
110,000	.0100		
112,000	.0100 +		
114,000	.0102		
116,000	.0105		
118,000	.0107		
120,000	.0108		
1,000		.0012	
100,000	.0101		
120,000	.0114		
122,000	.0114 +		
124,000	.0120		
126,000	.0121		
128,000	.0122		
130,000	.0123		
1,000		.0019	
132,000	.0125		
134,000	.0128		
136,000	.0131		
138,000	.0132		
140,000	.0135		
1,000		.0024	
142,000	.0137		
144,000	.0141		
146,000	.0143		
148,000	.0147		
150,000	.0149		
1,000		.0037	
152,000	.0154		
154,000	.0160		
156,000	.0164		
158,000	.0169		
160,000	.0176		
1,000		.0059	
162,000	.0189		
164,000	.0197		
166,000	.0204		
168,000	.0211		
170,000	.0222		
1,000		.0099	

Pin indented .004 inch by middle bearing.

721.—PHENIX IRON.

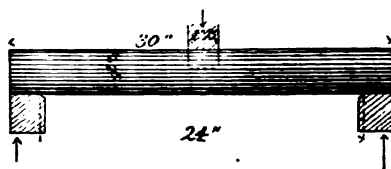
Finished diameter, 3.496 inches.

Same description and method of testing as 720.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000	.....	.....
5,000	.0012	.....
1,000	.....	0.	
10,000	.0020	.....
20,000	.0030	.....
30,000	.0039	.....
40,000	.0048	.....
50,000	.0056	.....
1,000	.....	.0005	
70,000	.0072	.....
90,000	.0087	.....
100,000	.0094	.....
1,000	.....	.0009	
110,000	.0102	.....
120,000	.0111	.....
1,000	.....	.0013	
125,000	.0115	.....
130,000	.0119	.....
132,000	.0122	.....
135,000	.0124	.....
137,000	.0126	.....
139,000	.0129	.....
140,000	.0130	.....
1,000	.....	.0021	
142,000	.0133	.....
144,000	.0136	.....
146,000	.0139	.....
148,000	.0141	.....
150,000	.0143	.....
1,000	.....	.0031	
152,000	.0151	.....
154,000	.0155	.....
156,000	.0159	.....
158,000	.0164	.....
160,000	.0171	.....
1,000	.....	.0054	

741.—PHENIX IRON.

Rough bar of 4.25 inches diameter turned down to 4 inches diameter.



Cast-iron semicircular seats. Corners rounded, $\frac{1}{4}$ inch radius.
Middle bearing $1\frac{3}{4}$ inches wide, wrought iron, semicircular.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000	.....	.....
5,000	.0045	.....
1,000	.....	0.	
10,000	.0097	.....
1,000	.....	0.	
15,000	.0145	.....

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000	.....	.0001	
18,000	.0189	.....
20,000	.0186	.....
1,000	.....	.0003	
21,000	.0185	.....
22,000	.0203	.....
23,000	.0212	.....
24,000	.0219	.....
25,000	.0227	.....
1,000	.....	.0004	
26,000	.0137	.....
27,000	.0246	.....
28,000	.0255	.....
29,000	.0264	.....
30,000	.0273	.....
1,000	.....	.0005	
31,000	.0283	.....
32,000	.0292	.....
33,000	.0301	.....
34,000	.0310	.....
35,000	.0320	.....
1,000	.....	.0011	
36,000	.0381	.....
37,000	.0343	.....
38,000	.0354	.....
39,000	.0365	.....
40,000	.0377	.....
1,000	.....	.0025	
41,000	.0396	.....
42,000	.0411	.....
43,000	.0433	.....
44,000	.0449	.....
45,000	.0475	.....
1,000	.....	.0084	Rested 39 hours.
45,000	.0479	.....
46,000	.0487	.....
47,000	.0499	.....
48,000	.0511	.....
49,000	.0585	.....
50,000	.0667	.....

742.—PHOENIX IRON.

Finished diameter, 4 inches, turned down from rough bar of 4.25 inches diameter. 24 inches between end supports. Middle bearing same as in 741.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000	.....	.....
5,000	.0045	.....
1,000	.....	0.	
10,000	.0100	.....
1,000	.....	0.	
15,000	.0150	.....
1,000	.....	.0001	
18,000	.0176	.....
1,000	.....	.0001	
20,000	.0192	.....
1,000	.....	.0002	
21,000	.0200	.....
22,000	.0210	.....
23,000	.0219	.....
24,000	.0226	.....
25,000	.0234	.....
1,000	.....	.0002	
26,000	.0242	.....
27,000	.0250	.....
28,000	.0260	.....
29,000	.0269	.....
30,000	.0277	.....
1,000	.....	.0004	

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
31,000	.0288		
32,000	.0296		
33,000	.0305		
34,000	.0315		
35,000	.0324		
1,000		.0010	
36,000	.0337		
37,000	.0349		
38,000	.0359		
39,000	.0372		
40,000	.0382		
1,000		.0027	
41,000	.0401		
42,000	.0413		
43,000	.0432		
44,000	.0455		
45,000	.0473		
1,000		.0080	
46,000	.0505		
47,000	.0530		
48,000	.0566		
49,000	.0620		
50,000	.0682		

743.—PHOENIX IRON.

Finished diameter, 4 inches, turned down from 4.25-inch rough bar.

Total length of bar, 18 inches.

End supports 12 inches apart.

Loaded at middle; width of bearing, $1\frac{1}{4}$ inches.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000			
5,000	.0011		
1,000		.000+	
10,000	.0025		
20,000	.0040		
1,000		.0001	
30,000	.0057		
1,000		.0001+	
40,000	.0072		
1,000		.0002	
50,000	.0089		
1,000		.0003	
55,000	.0097		
58,000	.0101		
60,000	.0105		
1,000		.005	
62,000	.0108		
64,000	.0111		
66,000	.0116		
68,000	.0119		
70,000	.0122		
1,000		.0007	
72,000	.0126		
74,000	.0131		
76,000	.0134		
78,000	.0139		
80,000	.0141		
1,000		.0011	
82,000	.0147		
84,000	.0151		
86,000	.0155		
88,000	.0159		
90,000	.0164		
1,000		.0019	
92,000	.0171		
94,000	.0178		

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
95,000	.0181		
1,000		.0029	
97,000	.0189		
99,000	.0195		
100,000	.0199		
1,000		.0042	
102,000	.0211		
104,000	.0218		
110,000	.0252		
1,000		.0081	

744.—PHOENIX IRON.

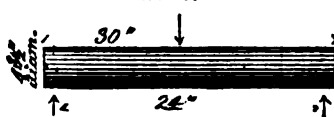
Same description as 743.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000			
5,000	.0037		
1,000		.0018	
10,000	.0048		
1,000		.0019	
20,000	.0067		
1,000		.0021	
30,000	.0080		
1,000		.0023	
40,000	.0098		
1,000		.0024	
50,000	.0110		
1,000		.0026	
55,000	.0120		
60,000	.0128		
1,000		.0026+	
62,000	.0130		
64,000	.0134		
66,000	.0138		
68,000	.0140		
70,000	.0143		
1,000		.0028	
72,000	.0148		
74,000	.0150		
76,000	.0154		
78,000	.0158		
80,000	.0161		
1,000		.0030	
82,000	.0168		
84,000	.0170		
86,000	.0172		
88,000	.0178		
90,000	.0181		
1,000		.0038	
92,000	.0187		
94,000	.0192		
95,000	.0195		
1,000		.0046	
97,000	.0201		
99,000	.0208		
100,000	.0213		
1,000		.0057	
1,000		.0049	
100,000	.0210		
102,000	.0215		
104,000	.0218		
106,000	.0227		
108,000	.0238		
110,000	.0255		
1,000		.0084	

Rested fourteen hours.

TRANSVERSE STRENGTH OF WROUGHT-IRON PINS.

1018.



4½ inches rough bar of Phoenix iron turned down to 4½ inches diameter.
 Loaded at middle bearing 1.75 inches wide.
 Supported at ends. Supports 24 inches apart.

Loads applied.	Deflection.	Set.	Remarks.
Pounds.	Inch.	Inch.	
1,000			
10,000	.0068		
1,000		0.	
15,000	.0100		
1,000		0.	
20,000	.0134		
1,000		.0004	
22,000	.0145		
24,000	.0158		
25,000	.0164		
1,000		.0005	
26,000	.0170		
27,000	.0175		
28,000	.0180		
29,000	.0185		
30,000	.0194		
1,000		.0005	
31,000	.0198		
32,000	.0205		
33,000	.0210		
34,000	.0215		
35,000	.0220		
1,000		.0008	
36,000	.0228		
37,000	.0234		
38,000	.0240		
39,000	.0245		
40,000	.0250		
1,000		.0008	
41,000	.0258		
42,000	.0264		
43,000	.0270		
44,000	.0275		
45,000	.0280		
1,000		.0010	
46,000	.0290		
47,000	.0295		
48,000	.0304		
49,000	.0310		
50,000	.0315		
1,000		.0018	
51,000	.0325		
52,000	.0330		
53,000	.0340		
54,000	.0345		
55,000	.0355		
1,000		.0030	
56,000	.0365		
57,000	.0374		
58,000	.0380		
59,000	.0390		
60,000	.0400		
1,000		.0045	
61,000	.0414		
62,000	.0425		
63,000	.0434		
64,000	.0444		
65,000	.0455		
1,000		.0075	
68,000	.0494		
70,000	.0530		
1,000		.0125	
73,000	.0590		
75,000	.0648		
1,000		.0210	

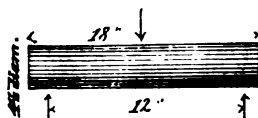
1019.

Dimensions same as 1018.

Tested in same manner as 1018.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000			It is probable that the pin did not come to bearing under 1,000 pounds load. Hence the <i>sets</i> are apparent ones only.
10,000	.0080		
1,000		.0005	
20,000	.0145		
1,000		.0005	
25,000	.0175		
30,000	.0204		
1,000		.0005	
35,000	.0230		
40,000	.0260		
1,000		.0010	
43,000	.0280		
45,000	.0290		
48,000	.0310		
50,000	.0325		
1,000		.0015	
51,000	.0334		
52,000	.0340		
53,000	.0348		
54,000	.0355		
55,000	.0365		
1,000		.0025	
56,000	.0375		
57,000	.0384		
58,000	.0390		
59,000	.0400		
60,000	.0405		
1,000		.0044	
61,000	.0420		
62,000	.0430		
63,000	.0440		
64,000	.0450		
65,000	.0460		
1,000		.0075	
66,000	.0480		
67,000	.0494		
68,000	.0505		
69,000	.0518		
70,000	.0535		
1,000		.0120	
71,000	.0560		
72,000	.0574		
73,000	.0590		
74,000	.0610		
75,000	.0630		
1,000		.0190	

1020.—PHOENIX IRON.

Rough bar, $4\frac{3}{4}$ inches, turned down to $4\frac{1}{2}$ inches diameter.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000			
10,000	.0015		

Loads applied.	Deflection.	Set.	Remarks.
Pounds.	Inch.	Inch.	
1,000		0.	
20,000	.0025		
1,000		0.	
30,000	.0039		
1,000		.0003	
40,000	.0050		
1,000		.0003	
50,000	.0060		
1,000		.0005	
55,000	.0069		
56,000	.0070		
57,000	.0070		
58,000			
59,000			
60,000	.0073		
1,000		.0005	
62,000	.0075		
64,000	.0080		
66,000	.0083		
68,000	.0083		
70,000	.0085		
1,000		.0005	
72,000	.0085		
74,000	.0090		
76,000	.0092		
78,000	.0095		
80,000	.0099		
1,000		.0005	
82,000	.0100		
84,000	.0103		
86,000	.0105		
88,000	.0109		
90,000	.0110		
1,000		.0005	
92,000	.0113		
94,000	.0115		
96,000	.0119		
98,000	.0120		
100,000	.0123		
1,000		.0005	
102,000	.0125		
104,000	.0129		
106,000	.0130		
108,000	.0135		
110,000	.0135		
112,000	.0140		
114,000	.0143		
116,000	.0145		
118,000	.0149		
120,000	.0150		
1,000		.0010	
122,000	.0155		
124,000	.0159		
126,000	.0160		
128,000	.0165		
130,000	.0169		
132,000	.0173		
134,000	.0175		
136,000	.0179		
138,000	.0183		
140,000	.0185		
142,000	.0190		
144,000	.0195		
146,000	.0200		
148,000	.0205		
150,000	.0210		
150,000	.0215		
1,000		.0039	After sustaining load 4 minutes. Rested 1 hour.
152,000	.0220		
154,000	.0225		
156,000	.0230		
158,000	.0235		
160,000	.0245		
1,000		.0055	

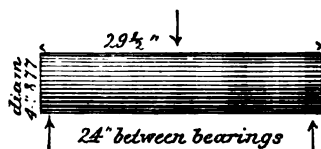
1021.—PHOENIX IRON.

Same size as 1020.

Tested in same manner as 1020.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000			
20,000	.0026		
1,000		.0001	
40,000	.0050		
1,000		.0001	
50,000	.0061		
60,000	.0074		
1,000		.0001	
70,000	.0086		
80,000	.0096		
1,000		.0001	
90,000	.0111		
100,000	.0121		
1,000		.0004	
110,000	.0136		
112,000	.0140		
114,000	.0141		
116,000	.0146		
118,000	.0150		
120,000	.0151		
1,000		.0010	
124,000	.0156		
128,000	.0164		
130,000	.0166		
134,000	.0174		
136,000	.0176		
138,000	.0181		
140,000	.0186		
1,000		.0021	
142,000	.0191		
144,000	.0196		
146,000	.0201		
148,000	.0204		
150,000	.0210		
1,000		.0031	
152,000	.0216		
154,000	.0224		
156,000	.0230		
158,500	.0236		
160,000	.0241		
1,000		.0051	
162,000	.0250		
164,000	.0256		
166,000	.0264		
168,000	.0271		
170,000	.0281		
1,000		.0080	

1081.—PENCOYD BAR.



Middle, semicircular, bearing, 1 1/4 inches wide.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000			
10,000	.0062		
20,000	.0112		

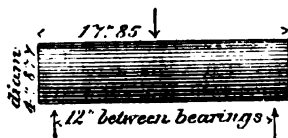
Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000	.....	.0006	
30,000	.0152	.....
40,000	.0197	.....
1,000	.....	.0007	
50,000	.0240	.....
60,000	.0288	.....
1,000	.....	.0016	
62,000	.0296	.....
64,000	.0306	.....
65,000	.0310	.....
1,000	.....	.0020	
67,000	.0322	.....
69,000	.0332	.....
70,000	.0337	.....
1,000	.....	.0027	
72,000	.0352	.....
74,000	.0366	.....
75,000	.0370	.....
1,000	.....	.0040	
77,000	.0392	.....
79,000	.0406	.....
80,000	.0417	.....
1,000	.....	.0067	
82,000	.0432	.....
84,000	.0456	.....
85,000	.0467	.....
1,000	.....	.0102	
90,000	.0560	.....
1,000	.....	.0172	
100,000	.0912	.....
1,000	.....	.0482	

1082.—PENCOYD IRON.

Same as 1081.

Loads applied.	Deflection.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
1,000	Gangings began at 1,000 pounds. The pin had previously been loaded with 40,000 pounds.
10,000	.0055	.....
20,000	.0104	.....
30,000	.0150	.....
40,000	.0190	.....
50,000	.0230	Rested 14 hours.
1,000	.....	0.
60,000	.0284	.....
1,000	.....	.0014
62,000	.0294	.....
64,000	.0300	.....
65,000	.0305	.....
1,000	.....	.0018
67,000	.0318	.....
69,000	.0380	.....
70,000	.0335	.....
1,000	.....	.0025
72,000	.0348	.....
74,000	.0364	.....
75,000	.0368	.....
1,000	.....	.0040
77,000	.0384	.....
79,000	.0398	.....
80,000	.0408	.....
1,000	.....	.0060
85,000	.0460	.....
1,000	.....	.0090

1093.—PENCOYD IRON.



Turned down from 5-inch rough bar.

Semicircular bearing at middle, 1.75 inches wide.

Loads applied.	Deflection.	Set.	Remarks.
Pounds.	Inch.	Inch.	
1,000	.....	.....
10,000	.0050	.....
20,000	.0068	.....
30,000	.0080	.....
40,000	.0094	.....
50,000	.0105	.....
1,000	.....	.0028	
60,000	.0115	.....
70,000	.0125	.....
80,000	.0135	.....
1,000	.....	.0030	
90,000	.0145	.....
100,000	.0155	.....
1,000	.....	.0030	
110,000	.0164	.....
120,000	.0174	.....
130,000	.0185	.....
140,000	.0198	.....
150,000	.0210	.....
1,000	.....	.0050	
160,000	.0228	.....
170,000	.0240	.....
180,000	.0264	.....
190,000	.0288	.....
200,000	.0324	.....
1,000	.....	.0120	

1094.—PENCOYD IRON.

Same as 1093.

Loads applied.	Deflection.	Set.	Remarks.
Pounds.	Inch.	Inch.	
1,000	.....	.....
10,000	.0052	.....
1,000	.....	.0027	
20,000	.0070	.....
30,000	.0082	.....
40,000	.0092	.....
50,000	.0102	.....
1,000	.....	.0032	
60,000	.0112	.....
70,000	.0122	.....
80,000	.0132	.....
1,000	.....	.0032	
90,000	.0142	.....
100,000	.0152	.....
1,000	.....	.0036	
110,000	.0162	.....
120,000	.0172	.....
130,000	.0186	.....
1,000	.....	.0042	
140,000	.0197	.....
150,000	.0212	.....
1,000	.....	.0052	
160,000	.0227	.....
170,000	.0242	.....
180,000	.0262	.....
190,000	.0292	.....
200,000	.0322	.....
1,000	.....	.0127	

G.

REPORT ON QUALITY AND CHARACTER OF WROUGHT IRON IN TEST BARS TAKEN FROM IRONS L AND S FOR COMPARATIVE TESTS OF EXTRA-REFINED AND DOUBLE-REFINED IRON.

By WALTER G. BERG, C. E.

PRELIMINARY REMARKS.

In this report the iron slab formed by rolling out the puddle balls will be called "muck-iron"; the muck-iron heated and rerolled will be called "reheated iron"; the reheated iron reheated and rerolled will be called "double-reheated" iron.

The usual practice at mills distinguishes three grades of iron formed from the same muck bar, according to the amount of refining (*i. e.*, reheating and rerolling) the mass of the iron is subjected to, viz:

(1.) *Single refined*.—The pile from which the definite iron is rolled is formed entirely of muck slabs.

(2.) *Extra refined*.—The pile from which the definite iron is rolled has reheated tops and bottoms, and muck slabs for intermediate layers. (In some cases, especially large piles, also reheated centers.)

(3.) *Double refined*.—The pile from which the definite iron is rolled is all reheated iron.

In some mills muck-iron is called No. 1 iron; single-refined iron, No. 2; double-refined iron, No. 3; extra-refined iron, No. 2 and No. 3 mixed.

IRON L.

1. *Ores and pig-iron.*

The pig-iron from which iron L is made is from blast furnace under same management as the rolling mill. The ores used are: Jefferson, N. Y., Lake Superior, Centre County, Pennsylvania, Champlain. Thus the pig at puddling furnace is all of the same character, the mixing being done at blast furnace. The only distinction made at puddling furnace is the grade of the pig, due to the different periods of the same cast.

2. *Muck-iron.*

Puddling furnace lined with blocks of Port Henry ore. Fixing paste composed of about one part Humboldt ore to four parts Lake Superior. Puddle balls always shingled, except during repairs, when Burden squeezer used.

The resulting muck bar is piled in yard without any distinction as to quality. Usual sizes, $3'' \times \frac{3}{4}''$, $4'' \times \frac{3}{4}''$; special sizes, $6'' \times \frac{3}{4}''$, $7'' \times \frac{3}{4}''$.

3. *Reheated iron.*

The piles for forming 3-inch and 4-inch reheated-iron slabs were 6 inches wide, 7 inches high over all, 29 inches long, and formed entirely of muck-iron; eight layers high, each of two $3'' \times \frac{3}{4}''$ muck slabs. The piles remained about 1 hour and 30 minutes in the heating furnace (soft coal) and passed through rolls (2 high, 18-inch train) in $2\frac{1}{2}$ minutes, receiving 11 reductions (2 rough box, 5 rough gothic, 4 flat finishing) in 13 passes.

The piles for forming 6-inch and 7-inch reheated-iron slabs were 7 inches wide, 7 inches high, 29 inches long, and formed entirely of muck-iron; eight layers high, each of 3-inch and 4-inch muck slabs, lapped. The thickness of reheated-iron slabs averaged $\frac{5}{8}$ inch full.

4. *Extra-refined iron.*

(a.) *Four test bars* $3'' \times 1'' \times 10'$; mark: L 1, 2, 3, 4.—Piles 7 inches wide, 7 inches high, 21 inches long; 9 layers high, tops and bottoms 7-inch reheated slabs; intermediates, 3-inch and 4-inch muck slabs, lapped. Time in furnace, 1 hour 10 minutes. Time in rolls, 3 minutes; 12 reductions (2 rough box, 6 rough gothic, 4 flat finishing) in 14 passes.

(b.) *Three test-bars* $5'' \times 1\frac{1}{2}'' \times 10'$; mark: L 5, 6, 7.—Piles 7 inches wide, 8 inches high, 54 inches long; 10 layers high, tops and bottoms 7-inch reheated slabs; intermediates, 3-inch and 4-inch muck slabs, lapped. Time in furnace, 1 hour 10 minutes. Time in rolls, $3\frac{1}{2}$ minutes; 9 reductions (2 rough box, 2 rough gothic, 3 box, 2 flat finishing) in 13 passes.

5. *Double-refined iron.*

(a.) *Four test bars* $3'' \times 1'' \times 10'$; mark: L 201, 202, 203, 204.—Piles 7 inches wide, 7 inches high, 21 inches long; 9 layers high, entirely of reheated iron, tops and bottoms 7-inch reheated slabs; intermediates, 3-inch and 4-inch reheated slabs, lapped. Time in furnace, 1 hour 5 minutes. Time in rolls, $2\frac{1}{2}$ minutes; 12 reductions (2 rough box, 6 rough gothic, 4 flat finishing) in 14 passes.

(b.) *Three test bars* $5'' \times 1\frac{1}{2}'' \times 10'$; mark: L 205, 206, 207.—Piles 7 inches wide, $8\frac{1}{4}$ inches high, 54 inches long; 10 layers high, entirely of reheated iron, tops and bottoms 7-inch reheated slabs; intermediates, 3-inch and 4-inch reheated slabs, lapped. Time in furnace, 1 hour 15 minutes. Time in rolls ———; 9 reductions (2 rough box, 2 rough gothic, 3 box, 2 flat finishing) in 12 passes.

IRON S.

1. *Ores and pig-iron.*

This iron is formed by a mixture of different qualities of pig-iron in the puddling furnace at the mills, viz: Musconetcong iron, Stanhope, N. J.; Pequest iron, New York; Thomas iron, Lehigh Valley, Pennsylvania; imported English iron.

2. *Muck-iron.*

Double puddling furnace, anthracite coal, cold blast. Port Henry ore in blocks for fixing; no paste used. Time in furnace, 1 hour 15 minutes to 2 hours. Puddle balls reduced by Burden squeezer. Blooms rolled on 3 high, 18 inches train.

For $2\frac{1}{2}'' \times \frac{3}{4}''$ muck slabs the bloom was 45 seconds in rolls, and received 10 reductions (8 gothic, 2 flat). The thickness of muck slabs averaged $\frac{3}{4}$ inch full.

3.—*Reheated iron.*

The piles for forming $2\frac{1}{2}$ -inch and $3\frac{1}{2}$ -inch reheated slabs were 6 inches wide, 6 inches high, and 20 inches long; 6 layers high, entirely of $2\frac{1}{2}$ -

inch and $3\frac{1}{2}$ -inch muck slabs, lapped. Time in rolls, $1\frac{1}{2}$ minutes; 12 reductions (4 rough box on 2 high 18-inch train, 6 rough gothic, and 2 flat finishing on 3 high 18-inch train) in 13 passes. The thickness of reheated slabs averaged $\frac{7}{8}$ inch.

4. *Extra-refined iron.*

(a.) *Three test bars* $3'' \times 1'' \times 1'$; mark: S 11, 12, 13.—Piles, 6 inches wide, $6\frac{1}{2}$ inches high, 25 inches long; 7 layers high; tops and bottoms, 6-inch reheated slabs; intermediates, $3\frac{1}{2}$ -inch and $2\frac{1}{2}$ -inch muck slabs, lapped. Time in furnace, 1 hour 15 minutes; time in rolls, —; 11 reductions (7 rough gothic, 4 flat finishing) in 12 passes.

(b.) *Three test bars* $5'' \times 1\frac{1}{4}'' \times 10'$; mark: S 15, 16, 17.—Piles, 8 inches wide, 8 inches high, 32 inches long; 8 layers high; tops and bottoms 8-inch reheated slabs; intermediate layers of one $3\frac{1}{2}$ -inch and two $2\frac{1}{2}$ -inch muck slabs, lapped. Time in furnace, 1 hour 35 minutes; time in rolls, $2\frac{3}{4}$ minutes; 10 reductions (6 rough box, 4 flat finishing) in 11 passes.

5. *Double-refined iron.*

(a.) *Three test bars* $3'' \times 1'' \times 10'$; mark: S 211, 212, 213.—Piles, 6 inches wide, $6\frac{1}{2}$ inches high, 25 inches long; 7 layers high, entirely of reheated iron; tops and bottoms 6-inch reheated slabs; intermediates, $2\frac{1}{2}$ -inch and $3\frac{1}{2}$ -inch reheated slabs, lapped. Time in furnace, 1 hour 15 minutes; time in rolls, —; 11 reductions (7 rough gothic, 4 flat finishing) in 12 passes.

(b.) *Three test bars* $5'' \times 1\frac{1}{4}'' \times 10'$; mark: S 215, 216, 217.—Piles, 8 inches wide, 8 inches high, 32 inches long; 8 layers high, entirely of reheated iron; tops and bottoms, 8-inch reheated slabs; intermediates, 6-inch and $2\frac{1}{2}$ -inch reheated slabs, lapped. Time in furnace, 1 hour 45 minutes; time in rolls, 2 minutes 45 seconds; 10 reductions (6 rough box, 4 flat finishing) in 11 passes.

NICKING AND BENDING TESTS OF MUCK AND REHEATED SLABS AT MILLS.

IRON L.

(1.) *Muck-iron*.—Three-inch muck slabs, nicked lightly on one side and bent cold by blows of a sledge, showed average fracture, $\frac{3}{4}$ fibrous, $\frac{1}{4}$ fine crystalline. Same bars bent cold without nicking, skin cracked at 45° , crack opened and tore across face at 90° , broke clean open at 135° . and flattened down on itself, showed very tough, tenacious material; fracture fibrous, with crystalline spots and streaks.

(2.) *Reheated iron*.—Three-inch reheated slabs, nicked light on one side and bent cold, showed mainly fibrous, interspersed with crystalline streaks and spots. Same bars bent cold without nicking, skin cracked at 90° , crack widened and broke across face at 160° , flattened down on itself, showed very tough fracture, fibrous mainly. Four-inch reheated slabs, nicked light on one side and bent cold, showed tough, fibrous, with crystalline streaks on nicked side. Same bars bent cold without nicking showed tough, no signs of cracking at 120° ; test abandoned. Seven-inch reheated slabs (taken from stock), nicked light on one side and bent cold, showed fibrous in general, but with distinct streaks of crystalline material. Bent cold without nicking, skin cracked at 45° . crack opened and widened at 90° , broke completely down at 120° .

IRON S.

(1.) *Muck-iron*.—Two and one-half-inch muck slabs, nicked on one side light and bent cold, snapped off and showed nearly throughout fine crystalline fracture, with a few fibrous streaks. Bent cold without nicking, snapped short off at 30°, fracture over one-half fine crystalline, remainder fibrous streaks and spots.

Three and one-half-inch muck slabs, nicked on one side and bent cold, showed fibrous interspersed with crystalline places. Bent cold without nicking, cracked open at 20°, broke short off at 45°; fracture fibrous, with crystalline places.

(2.) *Reheated iron*.—Two and one-half-inch reheated slabs, nicked on one side and bent cold, showed tough and fibrous. Bent cold without nicking, skin cracked at 45°, crack opened across face at 90°, broke off completely at 135°; fracture fibrous, with crystalline streaks and spots.

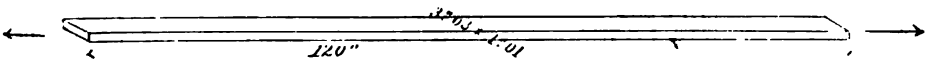
Three and one-half-inch reheated slabs, nicked light on one side and bent cold, showed tough and fibrous, with a few crystalline spots on nicked side.

Six-inch reheated slabs, nicked light on one side, showed very tough and fibrous, with a few crystalline specks.

Eight-inch reheated slabs, nicked light on one side, showed tough and fibrous, with considerable crystalline streaks on nicked side.

TENSILE TESTS OF WROUGHT IRON.—WROUGHT-IRON BARS FROM
ELMIRA I. & S. R. M. Co.

773.

Mark on bar. I. I.

Sectional area, 3.06 square inches.

Distance between holder faces, about 90 inches.

Gauged length, 80 inches.

10-inch sections, within the gauged length, laid off on the bar.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
Pounds.		Inches.	Inch.	
3,060	1,000			
15,300	5,000	.0132		
24,480	8,000	.0228		
30,600	10,000	.0290		
	1,000		.0005	
45,900	15,000	.0440		
55,080	18,000	.0532		
61,200	20,000	.0593		
	1,000		.0015	
64,260	21,000	.0625		
67,320	22,000	.0656		
68,850	22,500	.0674		
70,380	23,000	.0690		
71,910	23,500	.0706		
73,440	24,000	.0724		
74,970	24,500	.0742		
76,500	25,000	.0758		
	1,000		.0038	
78,030	25,500	.0783		
79,560	26,000	.0805		
81,090	26,500	.0822		

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
82,620	27,000	.0840		
	1,000		.0062	
84,150	27,500	.0874		
85,680	28,000	.0897		
87,210	28,500	.0919		Elastic limit.
88,740	29,000	.0962		
90,270	29,500	.1052		
91,800	30,000	.2720		
107,100	35,000			
161,300	62,710			Ultimate strength.
0	0	14.71		=18.4 per cent.

Fracture: fibrous, 95 per cent.; granular, 5 per cent.

Elongation in each 10-inch section: 1".34, 1".80, 1".58, 1".56, 2".37*, 2".07, 2".11, 1".88.

Area at fracture, $2".55 \times ".80 = 2.04$ square inches.

Contraction of area, 33.3 per cent.

Fracture occurred 32 inches from end of gauged section, as measured on bar before stretching.

The elongation of the fractured section indicated by the *.

774.

Same form as 773.

Mark on bar, L 2.

Sectional area, $3".03 \times 1".01 = 3.06$ square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
3,060	1,000			
15,300	5,000	.0123		
30,600	10,000	.0279		
	1,000		.0009	
45,900	15,000	.0427		
53,080	18,000	.0518		
61,200	20,000	.0575		
	1,000		.0015	
64,260	21,000	.0609		
67,320	22,000	.0639		
70,380	23,000	.0669		
73,440	24,000	.0701		
76,500	25,000	.0731		
	1,000		.0031	
78,030	25,500	.0753		
79,560	26,000	.0770		
81,090	26,500	.0788		
82,620	27,000	.0804		
	1,000		.0045	
84,150	27,500	.0828		
85,680	28,000	.0849		
87,210	28,500	.0876		
88,740	29,000	.0901		
90,270	29,500	.0932		Elastic limit.
91,800	30,000	.1050		
93,330	30,500	.1185		
94,860	31,000	.1765		
107,100	35,000	1.47		
122,400	40,000	2.83		
137,700	45,000	5.20		
153,000	50,000	8.45		
163,200		13.45		
164,160	53,630			Ultimate strength.
0	0	13.12		=16.4 per cent.

Elongation of 10-inch sections: 1".41, 1".54, 1".61, 1".68, 1".71, 1".82, 1".72, 1".63.

Area at fracture, $2".54 \times ".77 = 1.96$ square inches.

Contraction of area, 36 per cent.

Fracture occurred at face of holder dies, outside gauged length.

Appearance: fibrous, 92 per cent.; granular, 8 per cent.

775.

Same form as 773.

Mark on bar, L. 3.

Sectional area, $3".03 \times 1".01 = 3.06$ square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
Pounds.		Inches.	Inch.	
3,060	1,000			
15,300	5,000	.0126		
30,600	10,000	.0272		
	1,000		.0001	
45,900	15,000	.0418		
55,080	18,000	.0504		
61,200	20,000	.0563		
	1,000		.0012	
67,320	22,000	.0627		
73,440	24,000	.0682		
76,500	25,000	.0726		
	1,000		.0023	
78,030	25,500	.0752		
79,560	26,000	.0768		
81,090	26,500	.0788		
82,620	27,000	.0806		
	1,000		.0034	
84,150	27,500	.0830		
85,680	28,000	.0852		
87,210	28,500	.0874		
88,740	29,000	.0906		Elastic limit.
90,270	29,500	.0940		
91,800	30,000	.1455		
94,860	31,000	.650		
107,100	35,000	1.55		
122,400	40,000	3.06		
137,700	45,000	5.56		
153,000	50,000	9.82		
159,400	52,090			Ultimate strength. = 21.4 per cent.
0	0	17.12		

Elongation of 10-inch sections after fracture: 2".24, 1".96, 3".26*, 2".22, 2".02, 2".08, 1".66, 1".68.

Area at fracture, $2".54 \times ".79 = 2$ square inches.

Contraction of area, 34.6 per cent.

Fracture occurred 32 inches from holder face, as measured on bar before stretching.

Appearance: fibrous, 95 per cent.; granular, 5 per cent.

NOTE.—After stretching the bar with 4,500 pounds per square inch tension, causing an elongation of 5.56 inches in 80 inches, the 10-inch sections were measured, to determine the uniformity of the stretch up to this point. The elongations were as follows: ".72, ".72, ".72, ".72, ".72, ".66, ".65, ".65.

Under 45,000 pounds per square inch the bar rested about 12 minutes. The strain was increased to 47,700 pounds per square inch before rapid stretching again began.

When the total load had reached 159,200 pounds the stretch was 14 inches in 80 inches. Valves were kept wide open and the pressure sustained between 159,200 and 159,400 pounds till fracture suddenly took place; the stretch in the mean time increased from 14 inches to 17.4 inches.

776.

Same form as 773.

Mark on bar, L. 4.

Sectional area, $3''.03 \times 1''.01 = 3.06$ square inches.
Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
	1,000			
15,300	5,000	.0105		
30,600	10,000	.0238		
	1,000		.0004	
45,900	15,000	.0375		
55,080	18,000	.0462		
61,200	20,000	.0518		
	1,000		.0012	
67,320	22,000	.0580		
73,440	24,000	.0639		
76,500	25,000	.0677		
	1,000		.0028	
78,030	25,500	.0701		
79,560	26,000	.0721		
81,090	26,500	.0739		
82,620	27,000	.0754		
	1,000		.0038	
84,150	27,500	.0785		
85,680	28,000	.0802		
87,210	28,500	.0819		
88,740	29,000	.0848		Elastic limit.
90,270	29,500	.0928		
91,800	30,000	.1475		
94,880	31,000	.640		
107,100	35,000	1.48		
122,400	40,000	3.02		
137,700	45,000	5.43		
153,000	50,000	9.47		
157,400	51,440			Ultimate strength.
0	0	12.03		= 15.0 per cent.

Elongation of 10-inch sections after fracture: $1''.46$, $1''.54$, $1''.49$, $1''.49$, $1''.54$, $1''.48$, $1''.49$, $1''.54$.

Contraction of area, 20.3 per cent.

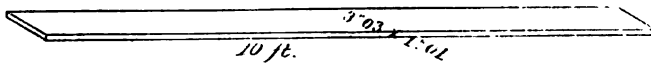
Fracture occurred $2\frac{3}{4}$ inches from face of holder dies.

Appearance: fibrous, 90 per cent.; granular, 10 per cent.

Elongation of 10-inch sections while under strain of 45,000 pounds per square inch: $''$.68, $''$.69, $''$.66, $''$.66, $''$.66, $''$.68, $''$.70, $''$.70.

Elongation of bar at time of maximum strain, 12 inches in 80 inches. Stretched rapidly to about 12.3 inches when fracture occurred.

777.—DOUBLE REFINED.

Mark on bar. L. 201

Sectional area, 3.06 square inches.
Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
Pounds.		Inches.	Inch.	
	1,000			
15,300	5,000	.0128		
24,480	8,000	.0220		
30,600	10,000	.0281		
	1,000		.0005	
45,900	15,000	.0429		
55,080	18,000	.0518		
61,200	20,000	.0579		
	1,000		.0015	
67,320	22,000	.0638		
70,380	23,000	.0672		
73,440	24,000	.0702		
76,500	25,000	.0738		
	1,000		.0032	
78,030	25,500	.0760		
79,560	26,000	.0780		
81,090	26,500	.0797		
82,620	27,000	.0813		
	1,000		.0050	
84,150	27,500	.0841		
85,680	28,000	.0863		
87,210	28,500	.0887		
88,740	29,000	.0909		
90,270	29,500	.0929		
91,800	30,000	.1074		
94,860	31,000	.2166		
107,100	35,000	1.22		
122,400	40,000	2.49		
137,700	45,000	4.58		
153,000	50,000	8.30		
163,900	53,560			Ultimate strength.
0	0	12.23		= 15.3 per cent.

Area at fracture, $2''.47 \times 1''.77 = 19$ square inches.

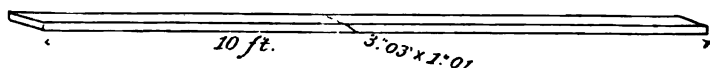
Contraction of area, 37.9 per cent.

Elongation of 10-inch sections after fracture: $1''.53, 1''.45, 1''.49, 1''.44, 1''.50, 1''.63, 1''.61, 1''.58$.

Fibrous fracture took place $4\frac{1}{2}$ inches from face of holder dies.

Elongation of 10-inch sections while under strain of 45,000 pounds per square inch: $'' .57, '' .57, '' .57, '' .56, '' .56, '' .59, '' .58, '' .58$.

857.—DOUBLE REFINED.

Mark on bar. L. 202.

Sectional area, 3.06 square inches.

Gauged length, 80 inches.

Bar not straight.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
3,060	1,000			
15,300	5,000	.0085		
30,600	10,000	.0215		
	1,000		.0010	
45,900	15,000	.0340		
61,200	20,000	.0470		
	1,000		.0005	
64,260	21,000	.0505		
67,320	22,000	.0530		
70,380	23,000	.0560		
73,440	24,000	.0587		
76,500	25,000	.0617		
	1,000		+.0005	
78,030	25,500	.0637		
79,560	26,000	.0655		
81,090	26,500	.0671		
82,620	27,000	.0685		
	1,000		+.003	
84,150	27,500	.0710		
85,680	28,000	.0725		
87,210	28,500	.0740		
88,740	29,000	.0760		
90,270	29,500	.0781		
91,800	30,000	.0815		Elastic limit.
93,330	30,500	.0845		
94,860	31,000	.0905		
107,100	35,000	1.20		
122,400	40,000	2.45		
137,700	45,000	4.65		
161,100	52,650	13.25		Ultimate strength.
0	0	12.96		= 16.2 per cent.

Area at fracture, $2''.76 \times '' .88 = 2.43$ square inches.

Contraction of area, 20.6 per cent.

Elongation of 10-inch sections after fracture: $1''.49, 1''.51, 1''.75^*$, $1''.65, 1''.60, 1''.62, 1''.64, 1''.70$.

Fracture: fibrous, 85 per cent.; granular, 15 per cent.

Elongation of 10-inch sections while under strain of 45,000 pounds per square inch: $'' .56, '' .56, '' .57, '' .58, '' .59, '' .60, '' .59, '' .60$.

The elongation, 13.25 inches, was observed immediately before fracture took place. Strains were rapidly applied near the close of the test: fracture occurring and the maximum strain being reached at the same time.

971.—DOUBLE REFINED.

Mark on bar, L. 203.

Size, $3'' .03 \times 1'' .01$.

Sectional area, 3.06 square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
3,060	1,000	.....	.....
15,300	5,000	.0128	.....
24,480	8,000	.0213	.....
30,600	10,000	.0273	.....
	1,000	.....	.0003	
45,900	15,000	.0418	.....
55,080	18,000	.0508	.....
61,200	20,000	.0568	.....
	1,000	.....	.0003	
67,320	22,000	.0628	.....
73,440	24,000	.0684	.....
76,500	25,000	.0718	.....
	1,000	.....	.0008	
78,030	25,500	.0733	.....
79,560	26,000	.0748	.....
81,090	26,500	.0763	.....
82,620	27,000	.0778	.....
84,150	27,500	.0793	.....
85,680	28,000	.0810	.....
87,210	28,500	.0828	.....
88,740	29,000	.0848	.....
90,270	29,500	.0863	.....
91,800	30,000	.0878	.....
	1,000	.....	.0028	
93,330	30,500	.0908	.....
94,860	31,000	.0924	.....
96,390	31,500	.0948	.....
97,920	32,000	.0963	.....
99,450	32,500	.0984	.....	Elastic limit.
100,980	33,000	.1038	.....
102,510	33,500	.5330	.....	Yielding continues.
107,100	35,000	1.20	.....
122,400	40,000	2.35	.....
137,700	45,000	4.35	.....
153,000	50,000	7.50	.....
163,700	53,500	13.75	.....	Ultimate strength.
0	0	13.23	.....	= 16.5 per cent.

Area at fracture, $2'' .67 \times '' .83 = 2.22$ square inches.

Contraction of area, 27.5 per cent.

Fibrous fracture took place 2 inches outside of 80-inch section.

Elongation of 10-inch sections while under load of 45,000 pounds per square inch: $'' .54, '' .54, '' .55, '' .55, '' .55, '' .54, '' .54, '' .54$.Elongation of 10-inch sections after fracture of the bar: $1'' .76, 1'' .72, 1'' .69, 1'' .69, 1'' .65, 1'' .60, 1'' .55, 1'' .57$.

Strains gradually applied without interruption, after 45,000 pounds per square inch was passed, till fracture took place. Fracture occurred while the specimen was under the maximum strain.

972.—DOUBLE REFINED.

Mark on bar, L. 204.

Sectional area, $3''.03 \times 1''.01 = 3.06$ square inches.
Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
3,060	1,000	The + sets attributed to cooling of the bar, which was brought into the testing-room from a position out of doors in the sun.
15,300	5,000	.0118	.....
30,600	10,000	.0260	.....
.....	1,000	.....	0.
45,900	15,000	.0410	.....
61,200	20,000	.0550
.....	1,000	.....	+ .0005
67,320	22,000	.0610	.....
76,500	25,000	.0696	.....
.....	1,000	.....	+ .0005
82,620	27,000	.0760	Elastic limit. Yielding continues while under strain. Yielding continues while under strain.
85,680	28,000	.0790	.....
88,740	29,000	.0820	.....
90,270	29,500	.0840	.....
91,800	30,000	.0855	.....
.....	1,000	.....	.0016
93,830	30,500	.0880	.....
94,860	31,000	.0900	.....
96,390	31,500	.0916	.....
97,920	32,000	.0942	.....
99,450	32,500	.0965	Ultimate strength. = 15.4 per cent.
100,980	33,000	.1020	.....
102,510	33,500	.600	.....
107,100	35,000	1.10	.....
122,400	40,000	2.20	.....
137,700	45,000	4.25	
153,000	50,000	7.40	
166,700	54,480	12.65	
0	0	12.35	

Area at fracture, $2''.68 \times 1''.86 = 2.30$ square inches.

Contraction of area, 24.8 per cent.

Elongation of 10-inch sections at 45,000 pounds per square inch: ".54, ".54, ".54, ".53, ".52, ".52, ".52.

Elongation after fracture: *1''.68, 1''.52, 1''.58, 1''.55, 1''.49, 1''.49, 1''.52, 1''.52.

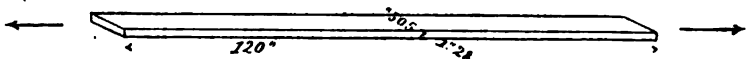
Fibrous fracture took place 3 inches outside of 80-inch section.

TENSILE TESTS OF WROUGHT-IRON ROLLED BARS.

973.

Singled worked bars from the Elmira I. and S. R. M. Co.

Mark on bar L. 5.



Sectional area, 6.46 square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
6,460	1,000	.....	.....	Bar warped.
32,300	5,000	.0125	.....
64,600	10,000	.0275	.....

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
	1,000		0.	
98,900	15,000	.0425	.....
129,200	20,000	.0575	.....
	1,000		.0010	
142,120	22,000	.0640	.....
155,040	24,000	.0705	.....
161,500	25,000	.0747	.....
	1,000		.0035	
164,730	25,500	.0780	.....
167,960	26,000	.0807	.....
171,190	26,500	.0835	.....
174,420	27,000	.0865	.....
177,650	27,500	.0905	.....	Elastic limit.
180,880	28,000	.0955	.....
	1,000		.0050	
184,110	28,500	.0975	.....
187,340	29,000	.1105	.....
190,570	29,500	.2875	.....
193,800	30,000	.516	.....	Yielding continued.
226,100	35,000	1.80	.....
258,400	40,000	3.60	.....
290,700	45,000	6.50	.....
323,000	50,000	11.40	.....	Ultimate strength.
326,200	50,500	11.40	.....	= 14.5 per cent.
0	0	12.59	.....

Area at fracture, $4''.30 \times 1''.09 = 4.69$ square inches.

Contraction of area, 27.6 per cent.

Elongation of 10-inch section while under strain of 45,000 pounds per square inch: ".82, ".81, ".81, ".81, ".81, ".81, ".81, ".82.

Elongation of 10-inch sections after fracture: $2''.25^*$, $1''.31$, $1''.29$, $1''.32$, $1''.28$, $1''.26$, $1''.28$, $1''.60$.

Fracture took place 4 inches inside of 80-inch section and 9 inches from face of clamping dies. Appearance: fibrous, 95 per cent.; granular, 5 per cent. When 50,000 pounds per square inch was reached the test was interrupted about 6 minutes. This rest apparently had the effect of increasing the ultimate strength of the bar, as rapid elongation did not begin again until 326,200 pounds was reached, the highest load sustained. Stretching then began, reducing the strain to 324,500 pounds, and stretching the bar from 11.40 to 12.30 inches, at which time fracture took place.

974.

Mark on bar, L. 6.

Sectional area, $5''.04 \times 1''.27 = 6.4$ square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
6,400	1,000			
32,000	5,000	.0135	.....
64,000	10,000	.0290	.....
	1,000		.00	
96,000	15,000	.0440	.....
128,000	20,000	.0590	.....
	1,000		.0010	
160,000	25,000	.0766	.....
	1,000		.0045	
163,200	25,500	.0792	.....	Rested 1 hour.
166,400	26,000	.0810	.....
169,600	26,500	.0830	.....

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
172,800	27,000	.0865	Elastic limit.
176,000	27,500	.0895	.....
178,200	28,000	.0940	.....
182,400	28,500	.1020	.....
185,600	29,000	.1055	.....
.....	1,0000226	Yields rapidly.
188,800	29,500	.1160	.....
192,000	30,000	.262	.....
224,000	35,000	1.85	.....
256,000	40,000	3.50	.....
288,000	45,000	6.20	.....
320,000	50,000	13.40	.....
323,400	50,530	14.20	Ultimate strength. =17.3 per cent.
.....	.....	13.84	.....

Area at fracture, $4''.40 \times 1''.13 = 4.97$ square inches.

Contraction of area, 22.3 per cent.

Elongation of 10-inch sections while under strain of 45,000 pounds per square inch: ".78, ".76, ".77, ".78, ".78, ".78, ".77, ".78.

Elongation after fracture: $1''.75, 1''.60, 1''.68, 1''.86, 1''.76, 1''.75, 1''.70, 1''.74^*$.

Broke $\frac{1}{2}$ inch inside of face of dies. Appearance: fibrous, 70 per cent.; granular, 30 per cent.

975.

Mark, L. 7.

Sectional area, $5''.03 \times 1''.27 = 6.39$ square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
6,390	1,000	Elastic limit.
31,950	5,000	.0128	.....
63,900	10,000	.0278	.....
.....	1,000	.....	.0003
95,850	15,000	.0433	.....
127,800	20,000	.0583	.....
.....	1,000	.....	.0018
134,190	21,000	.0618	.....
140,580	22,000	.0650	.....
146,970	23,000	.0684	.....
.....	1,0000024	Still yielding when gauging was taken.
150,165	23,500	.0704	.....
153,380	24,000	.0723	.....
156,555	24,500	.0740	.....
159,750	25,000	.0758	.....
.....	1,000	.....	.0054
162,945	25,500	.0788	.....
166,140	26,000	.0810	.....
169,335	26,500	.0828	.....
172,530	27,000	.0848	.....
175,725	27,500	.0904	Ultimate strength. =18 per cent.
178,920	28,000	.0963	.....
182,115	28,500	.1008	.....
185,310	29,000	.1133	.....
191,700	30,000	.7738	.....
223,650	35,000	1.85	.....
255,600	40,000	3.45	.....
287,550	45,000	6.30	.....
319,500	50,000	13.60	.....
320,800	50,200	14.50	.....
0	0	14.40	.....

Area at fracture, $4''.38 \times 1''.13 = 4.95$ square inches.

Contraction of area, 22.5 per cent.

Elongation of 10-inch sections while under strain of 45,000 pounds per square inch: ".78, ".78, ".80, ".80, ".80, ".79, ".78, ".77.

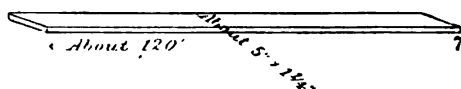
Elongation of 10-inch sections after fracture: 1".72, 2".00*, 1".81, 1".83, 1".90, 1".79, 1".70, 1".65.

Broke 15 inches inside of 80-inch section and 24 inches from face of dies.

Appearance: fibrous, 95 per cent.; granular, 5 per cent.

977.—DOUBLE ROLLED.

Mark, L. 205.



Sectional area, $5''.02 \times 1''.26 = 6.33$ square inches.
Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
6,330	1,000	.....	.....
31,650	5,000	.0116	.....
63,300	10,000	.0280	.....
.....	1,000	.....	.0006	
94,950	15,000	.0409	.....
126,600	20,000	.0569	.....
.....	1,000	.....	.0014	
132,930	21,000	.0590	.....
139,260	22,000	.0624	.....
145,590	23,000	.0659	.....
151,920	24,000	.0699	.....
158,250	25,000	.0739	.....
.....	1,000	.....	.0049	
161,415	25,500	.0764	.....
164,580	26,000	.0794	.....
167,745	26,500	.0810	.....
170,910	27,000	.0849	.....	Elastic limit.
.....	1,000	.....	.0094	
174,075	27,500	.0896	.....
177,240	28,000	.0939	.....
180,405	28,500	.1009	.....
183,570	29,000	.1240	.....	Yielding continued.
189,900	30,000	.7074	.....	Do.
221,550	35,000	1.65	.....
253,200	40,000	3.20	.....
284,850	45,000	5.80	.....
316,500	5,000	11.90	.....
324,300	51,230	14.20	.....	Ultimate strength.
0	0	14.23	.....	= 17.8 per cent.

Area at fracture, $4''.57 \times 1''.05 = 4.8$ square inches.

Contraction of area, 24.2 per cent.

Elongation of 10-inch sections while under strain of 45,000 pounds per square inch: ".72, ".72, ".73, ".73, ".73 ".73, ".72, ".72.

Elongation after fracture: 1".93, 1".97, 2".37*, 2".02, 1".50, 1".42, 1".45, 1".57.

Appearance of fracture: fibrous, 80 per cent.; granular, 20 per cent.

H. Ex. 12—14

978.—DOUBLE ROLLED.

Mark, L. 206.

Sectional area, $5''.03 \times 1''.26 = 6.34$ square inches.
Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
6,340	1,000			
31,700	5,000	.0118		
63,400	10,000	.0256		
	1,000		— .0005	
95,100	15,000	.0396		
126,800	20,000	.0540		
	1,000		0.	
133,140	21,000	.0575		
139,480	22,000	.0610		
145,820	23,000	.0640		
152,160	24,000	.0672		
158,500	25,000	.0710		
	1,000		.0016	
161,870	25,500	.0735		
164,840	26,000	.0755		
168,010	26,500	.0780		
171,180	27,000	.0810		
	1,000		.0046	
174,350	27,500	.0846		Elastic limit.
177,520	28,000	.0876		
180,690	28,500	.0930		
183,860	29,000	.0996		
187,030	29,500	.1520		Rapid yielding.
190,200	30,000	.42		Do.
221,900	35,000	1.60		
253,600	40,000	3.20		
285,300	45,000	5.70		
317,000	50,000	11.90		
320,200	50,500	14.20		Ultimate strength = 17.6 per cent.
0	0	14.09		

Area at fracture, $4''.63 \times 1''.08 = 5$ square inches.

Contraction of area, 21.1 per cent.

Elongation of 10-inch sections under 45,000 pounds per square inch:
".72, ".73, ".72, ".71, ".71, ".71, ".70, ".70.

Elongation after fracture: $1''.95^*$, $1''.96$, $1''.75$, $1''.70$, $1''.68$, $1''.69$, $1''.68$, $1''.68$.

Broke 11 inches inside of 80-inch section.

Fracture fibrous; slightly granular.

979.

Mark, L. 207.

Sectional area, $5''.03 \times 1''.26 = 6.34$ square inches.
Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
6,340	1,000			
31,700	5,000	.0130		
63,400	10,000	.0277		
	1,000		0.	

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
95,100	15,000	.0421		
126,800	20,000	.0575		
	1,000		.0010	
133,140	21,000	.0610		
139,480	22,000	.0640		
145,820	23,000	.0675		
148,960	23,500	.0695		
152,180	24,000	.0715		
155,330	24,500	.0730		
158,500	25,000	.0750		
	1,000		.0035	
161,670	25,500	.0775		
164,840	26,000	.0795		
168,010	26,500	.0815		
171,180	27,000	.0845		Elastic limit.
	1,000		.0075	
174,350	27,500	.0885		
177,520	28,000	.0825		
180,690	28,500	.0960		
183,860	29,000	.1225		Rapid yielding.
190,200	30,000	.548		Do.
221,900	35,000	1.65		
253,600	40,000	3.20		
285,800	45,000	5.70		
317,000	50,000	11.50		
323,500	51,030	17.00		Ultimate strength = 21.4 per cent.
0	0	17.13		

Area at fracture, $4.37 \times .99 = 4.32$ square inches.

Contraction of area, 31.9 per cent.

Elongation of 10-inch sections under 45,000 pounds per square inch: ".72, ".72, ".71, ".71, ".71, ".71, ".71, ".71.

Elongation after fracture: $3''.29^*$, $2''.05$, $1''.90$, $1''.92$, $1''.95$, $1''.98$, $1''.96$, $2''.08$.

Broke 6.4 inches from 80-inch gauge mark.

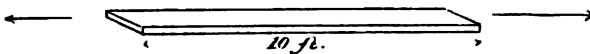
Fracture same in appearance as 978.

WROUGHT-IRON ROLLED BARS FROM PASSAIC R. M. CO.

SINGLE-ROLLED BARS.

980.

Mark S. II



Sectional area, $3''.05 \times 1''.01 = 3.08$ square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
3,080	1,000			
15,400	5,000	.0130		
30,800	10,000	.0280		
	1,000		.0010	
46,200	15,000	.0435		
61,600	20,000	.0580		
	1,000		.0012	

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
64,680	21,000	.0612	.....
67,760	22,000	.0640	.....
70,840	23,000	.0672	.....
73,920	24,000	.0702	.....
77,000	25,000	.0735	.....
	1,000	.....	.0030	
78,540	25,500	.0760	.....
80,080	26,000	.0780	.....
81,620	26,500	.0795	.....
83,160	27,000	.0820	.....
	1,000	.....	.0050	
84,700	27,500	.0840	.....
86,240	28,000	.0865	.....
87,780	28,500	.0900	.....	Elastic limit.
89,320	29,000	.0985	.....
92,400	30,000	.727	.....	Rapid yielding.
107,800	35,000	2.00	.....
123,200	40,000	3.85	.....
138,600	45,000	6.60	.....
149,000	48,640	10.60	.....	Ultimate strength = 13.3 per cent.
0	0	10.61	.....

Area at fracture, $2''.71 \times ''\text{.86} = 2.33$ square inches.

Contraction of area, 24.3 per cent.

Elongation of 10-inch sections under strain of 45,000 pounds per square inch: $''\text{.82}$, $''\text{.82}$, $''\text{.82}$, $''\text{.81}$, $''\text{.82}$, $''\text{.85}$, $''\text{.83}$, $''\text{.83}$.

Elongation after fracture: $1''\text{.29}$, $1''\text{.24}$, $1''\text{.23}$, $1''\text{.22}$, $1''\text{.27}$, $1''\text{.79}$, $1''\text{.29}$, $1''\text{.28}$.

Fracture fibrous; slightly granular.

Fracture opened first at one edge at imperfect welds in rolling.

981.

Mark, S. 12.

Sectional area, $3''.05 \times 1''\text{.01} = 3.08$ square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
3,080	1,000	.....	.....
	5,000	.0136	.....
	10,000	.0284	.....
	1,000	.....	.0006	
46,200	15,000	.0434	.....	59,900 — 2,200 = 57,700.
61,600	20,000	.0580	.....
	1,000	.....	.0009	
67,760	22,000	.0644	.....
73,920	24,000	.0706	.....
77,000	25,000	.0744	.....
	1,000	.....	.0020	
78,540	25,500	.0764	.....
80,080	26,000	.0780	.....
81,620	26,500	.0794	.....
83,160	27,000	.0814	.....
	1,000	.....	.0034	
84,700	27,500	.0846	.....
86,240	28,000	.0870	.....	Elastic limit.
87,780	28,500	.0919	.....
92,400	30,000	.35	.....	Rapid yielding.
107,800	35,000	2.20	.....
123,200	40,000	3.90	.....
138,600	45,000	6.85	.....
155,200	50,390	13.70	.....	Ultimate strength.
0	0	13.51	.....	= 16.9 per cent.

Area at fracture, $2''.57 \times ''\text{.80} = 2$ square inches.

Contraction of area, 35.1 per cent.

Elongation of 10-inch sections under strain of 45,000 pounds per square inch: ".85, ".85, ".84, ".85, ".84, ".88, ".88, ".86.

Elongation after fracture: 2".00, 1".41, 1".32, 1".35, 1".35, 1".48, 1".62, 2".98.*

Broke 5.8 inches from end of gauged length. Appearance fibrous; color of fracture varied from dark to light.

992.

Mark, S. 13.

Sectional area, $3''.05 \times 1'' = 3.05$ square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
3,050	1,000			
15,250	5,000	.0129		
30,500	10,000	.0279		
	1,000		0.	
45,750	15,000	.0424		
61,000	20,000	.0574		
	1,000		.0009	
67,190	22,000	.0624		
73,200	24,000	.0684		
76,250	25,000	.0734		
	1,000		.0029	
77,775	25,500	.0759		
79,300	26,000	.0780		
80,825	26,500	.0804		
82,350	27,000	.0829		
	1,000		.0060	
83,875	27,500	.0850		
85,400	28,000	.0869		
86,925	28,500	.0894		Elastic limit.
88,450	29,000	.1244		
91,500	30,000	.700		
106,750	35,000	2.10		
122,000	40,000	3.70		
137,250	45,000	6.60		
143,500	47,050	7.20		Ultimate strength.
0	0	7.20		= 9 per cent.

Area at fracture, $2''.69 \times '' .88 = 2.38$ square inches.

Contraction of area, 22 per cent.

Elongation of 10-inch sections under strain of 45,000 pounds per square inch: ".83, ".84, ".82, ".80, ".82, ".87, ".81, ".81.

Elongation after fracture: ".82, ".82, ".81, ".80, ".82, 1".50, * ".80, ".83.

Fibrous fracture, imperfect weld in rolling, dirty appearance.

993.—DOUBLE-ROLLED BARS.

Mark, S. 211.

Sectional area, $3''.05 \times 1'' = 3.05$ square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
3,050	1,000			
15,250	5,000	.0137		
30,500	10,000	.0285		
	1,000		0.	

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	
45,750	15,000	.0435		
61,000	20,000	.0485		
	1,000		.0005	
67,100	22,000	.0645		
73,200	24,000	.0705		
76,250	25,000	.0735		
	1,000		.0015	
77,775	25,500	.0750		Rested one hour.
79,300	26,000	.0765		
80,825	26,500	.0790		
82,350	27,000		.0017	
	1,000			
83,875	27,500	.0820		
85,400	28,000	.0837		
86,925	28,500	.0855		
88,450	29,000	.0875		
89,975	29,500	.0900		Elastic limit.
91,500	30,000	.0935		
93,025	30,500	.0990		
94,550	31,000			Rapid yielding.
106,750	35,000	1.90		
122,000	40,000	3.55		
137,250	45,000	6.20		
152,500	50,000	12.20		
155,000	51,150	17.70		Ultimate strength. = 22 per cent.
0	0	17.60		

Elongation of 10-inch sections under strain of 45,000 pounds per square inch: ".78, ".78, ".77, ".77, ".77, ".77, ".78, ".78.

Elongation after fracture: 1".97, 2".12, 2".13, 2".10, 2".88,* 2".20, 2".15, 2".05.

Area at fracture, 2".58 × ".81 = 2.09 square inches.

Contraction of area, 31.5 per cent.

Fine fibrous fracture.

994.

Mark, S. 212.

Sectional area, 3".05 × 1" = 3.05 square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
3,050	1,000			
15,250	5,000	.0170		
30,500	10,000	.0320		
	1,000		.0025	
61,000	20,000	.0626		
	1,000		.0035	
76,250	25,000	.0792		
	1,000		.0042	
79,300	26,000	.0820		
82,350	27,000	.0850		
	1,000		.0055	
83,875	27,500	.0876		
85,400	28,000	.0905		
86,925	28,500	.0920		Elastic limit.
88,450	29,000	.0950		
89,975	29,500	.0980		
91,500	30,000	1.1540		Rapid yielding.
106,750	35,000	2.00		
122,000	40,000	3.60		
137,250	45,000	6.20		
152,500	50,000	12.20		
155,000	51,110	17.80		Ultimate strength. = 22 per cent.
0	0	17.61		

Area at fracture, 2".50 × ".78 = 1.95 square inches.

Contraction of area, 36.1 per cent.

Elongation of 10-inch sections while under strain of 45,000 pounds per square inch: ".78, ".78, ".78, ".78, ".78, ".77, ".77, ".76.

Elongation after fracture: 2".15, 2".95*, 2".20, 2".22, 2".10, 2".14, 1".95, 1".90.

Fine fibrous fracture.

995.

Mark S. 213.

Sectional area, $3''.05 \times 1''.02 = 3.11$ square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
3,110	1,000			
15,550	5,000	.0150		
31,100	10,000	.0315		
	1,000		+.0010	
46,650	15,000	.0457		
62,200	20,000	.0605		
	1,000		.0040	
77,750	25,000	.0751		
	1,000		.0040	
80,860	26,000	.0785		
83,970	27,000	.0825		
	1,000		.0050	
85,525	27,500	.0837		
87,080	28,000	.0856		
88,635	28,500	.0871		
90,190	29,000	.0885		
91,745	29,500	.0900		Elastic limit.
93,300	30,000	.0945		
108,850	35,000	1.85		
124,400	40,000	3.45		
139,950	45,000	5.80		
155,500	50,000	10.90		
161,300	51,860	18.15		Ultimate strength.
0	0	17.98		=22.5 per cent.

Area at fracture, $2''.46 \times 1''.77 = 1.89$ square inches.

Contraction of area, 39.2 per cent.

Elongation of 10-inch sections while under strain of 45,000 pounds per square inch: ".72, ".73, ".74, ".73, ".72, ".72, ".72, ".72.

Elongation after fracture: 2".00, 2".21, 2".26, 2".34, 3".17*, 2".05, 1".90, 2".05.

Fine fibrous fracture.

SINGLE-ROLLED BARS.

1000.

Mark, S. 15.

Length, 10 feet.

Sectional area, $5''.08 \times 1''.26 = 6.4$ square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
6,400	1,000			
32,000	5,000	.0110		
64,000	10,000	.0250		
	1,000		0.	

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
96,000	15,000	.0391		
128,000	20,000	.0635		
	1,000		.0010	
134,400	21,000	.0670		
140,800	22,000	.0605		
147,200	23,000	.0635		
153,600	24,000	.0690		
160,000	25,000	.0725		
	1,000		.0055	
163,200	25,500	.0760		
166,400	26,000	.0791		Elastic limit.
169,600	26,500	.0830		
172,800	27,000	.0875		
176,000	27,500	.135		
192,000	30,000	.90		
224,000	35,000	2.10		
256,000	40,000	3.80		
288,000	45,000	6.60		
318,100	49,700	13.80		Ultimate strength.
0	0	13.73		= 17.1 per cent.

Area at fracture, $4''.66 \times 1.11 = 5.17$ square inches.

Contraction of area, 19.2 per cent.

Elongation of 10-inch sections at 45,000 pounds per square inch: ".82, ".82, ".82, ".82, ".82, ".84, ".84.

Elongation after fracture: $1''.63, 1''.63, 1''.65, 1''.68, 1''.66, 1''.96, 1''.77, 1''.75$.

Fracture: Fibrous, 85 per cent.; granular, 15 per cent.

1001.

Mark, S. 16.

Sectional area, $5''.08 \times 1''.26 = 6.4$ square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
6,400	1,000			
32,000	5,000	.0128		
64,000	10,000	.0280		
	1,000		0.	
96,000	15,000	.0434		
128,000	20,000	.0604		
	1,000		.0043	
134,400	21,000	.0644		
140,800	22,000	.0683		
147,200	23,000	.0728		
153,600	24,000	.0774		
160,000	25,000	.0863		Elastic limit.
	1,000		.0168	
166,400	26,000	.0880		Continued yielding.
172,800	27,000	.1120		
192,000	30,000	.75		
224,000	35,000	2.05		
256,000	40,000	3.90		
288,000	45,000	6.70		
315,400	49,280	12.75		Ultimate strength.
0	0	12.57		= 15.7 per cent.

Area at fracture, $4''.75 \times 1''.11 = 5.27$ square inches.

Contraction of area, 17.7 per cent.

Elongation of 10-inch sections while under a strain of 45,000 pounds per square inch: ".85, ".84, ".83, ".84, ".83, ".83, ".85, ".83.

Elongation after fracture: 1".55, 1".50, 1".50, 1".60, 1".54, 1".75*, 1".58, 1".55.

Fracture: Fibrous, 85 per cent.; granular, 15 per cent.

1002.

Mark, S. 17.

Sectional area, $5''.09 \times 1''.26 = 6.41$ square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
6,410	1,000			
32,050	5,000	.0116		
64,100	10,000	.0256		
	1,000		0.	
96,150	15,000	.0406		
115,380	18,000	.0454		
128,200	20,000	.0569		
	1,000		.0019	
131,405	20,500	.0584		
134,610	21,000	.0599		
137,815	21,500	.0619		
141,020	22,000	.0636		
144,225	22,500	.0659		
147,430	23,000	.0679		
150,635	23,500	.0704		
153,840	24,000	.0730		
157,045	24,500	.0754		
160,250	25,000	.0786		Elastic limit.
	1,000		.0090	
163,455	25,500	.0834		
166,660	26,000	.0879		
169,865	26,500	.0934		
173,070	27,000	.1154		
192,300	30,000	1.00		
224,350	35,000	2.10		
256,400	40,000	4.20		
288,450	45,000	7.50		
312,400	48,740	11.50		Ultimate strength.
0	0	11.41		= 14.3 per cent.

Area at fracture, $4''.74 \times 1''.12 = 5.3$ square inches.

Contraction of area, 17.3 per cent.

Elongation of 10-inch sections under strain of 45,000 pounds per square inch: ".95, ".95, ".94, ".95, ".94, ".93, ".93, ".91.

Elongation after fracture, 1".40, 1".34, 1".29, 1".56, 1".70*, 1".52, 1".32, 1".28.

Appearance of fracture: Fibrous, 80 per cent.; granular, 20 per cent.

WROUGHT-IRON REROLLED BARS.

1003.

Mark, S. 215.

Sectional area, $5''.05 \times 1''.25 = 6.31$ square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
6,310	1,000			
31,550	5,000	.0016		
63,100	10,000	.0280		

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
Pounds.		Inches.	Inch.	
	1,000		0.	
94,650	15,000	.0399		
113,580	18,000	.0485		
126,200	20,000	.0545		
	1,000		.0002	
132,510	21,000	.0578		
138,820	22,000	.0609		
145,130	23,000	.0646		
151,440	24,000	.0674		
157,750	25,000	.0710		
	1,000		.0030	
160,905	25,500	.0739		
164,060	26,000	.0764		
167,215	26,500	.0784		
170,370	27,000	.0814		
173,525	27,500	.0846		Elastic limit.
176,680	28,000	.0880		
179,835	28,500	.1034		Rapid yielding.
186,300	30,000	.70		
220,850	35,000	1.85		
252,400	40,000	3.55		
283,950	45,000	6.10		
321,700	50,980	15.40		Ultimate strength.
0	0	15.29		=19.1 per cent.

Area at fracture, $4''.55 \times 1''.06 = 4.82$ square inches.

Contraction of area, 23.6 per cent.

Elongation of 10-inch sections under strain of 45,000 pounds per square inch: ".76, ".78, ".75, ".76, ".75, ".76, ".76, ".78.

Elongation after fracture: $1''.99, 1''.93, 1''.81, 1''.84, 2''.10, 1''.77, 1''.90, 1''.90$.


Fracture fibrous. Less than 5 per cent. granular.

1004.

Mark, S. 216.

Sectional area, $5''.06 \times 1''.26 = 6.33$ square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
Pounds.		Inches.	Inch.	
6,380	1,000			Bar not straight. 
31,900	5,000	.0120		
63,800	10,000	.0272		
	1,000		0.	
95,700	15,000	.0415		
114,840	18,000	.0505		
127,640	20,000	.0566		
	1,000		.0010	
133,980	21,000	.0600		
140,380	22,000	.0630		
146,740	23,000	.0665		
153,120	24,000	.0700		
158,500	25,000	.0742		
	1,000		.0052	
162,690	25,500	.0770		
165,880	26,000	.0796		
169,070	26,500	.0820		
172,260	27,000	.0852		Elastic limit.
175,450	27,500	.0906		
178,640	28,000	.1120		
191,400	30,000	.60		

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
223,300	35,000	2.00		
255,200	40,000	3.85		
287,100	45,000	6.40		
323,900	50,770	15.10		Ultimate strength.
0	0	16.58		= 20.7 per cent.

Area at fracture, $4''.40 \times 1''.02 = 4.49$ square inches.

Contraction of area, 29.6 per cent.

Elongation of 10-inch sections under strain of 45,000 pounds per square inch: ".78, ".79, ".78, ".79, ".80, ".81, ".82, ".83.

Elongation after fracture: $1''.86, 1''.85, 1''.74, 1''.80, 1''.90, 1''.98, 2''.30, *3''.15$.

Appearance of fracture, fibrous.

The bar was elongated 15.10 inches at the time of maximum strain. The elongation was increased to 16.70 inches at the instant of fracture.

1005.

Mark, S. 217.

Sectional area, $5''.06 \times 1''.25 = 6.33$ square inches.

Gauged length, 80 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inches.</i>	<i>Inch.</i>	
6,330	1,000			
31,650	5,000	.0120		
63,300	10,000	.0270		
	1,000		0.	
94,950	15,000	.0415		
113,940	18,000	.0505		
126,600	20,000	.0570		
	1,000		.0015	
132,930	21,000	.0607		
139,260	22,000	.0641		
145,590	24,000	.0675		
151,920	23,000	.0725		
158,250	25,000	.0767		
	1,000		.0070	
161,415	25,500	.0805		
164,580	26,000	.0840		
167,745	26,500	.0885		
170,910	27,000	.0925		Elastic limit.
174,075	27,500	.0995		
179,240	28,000	.1115		
189,900	30,000	.75		
221,550	35,000	1.85		
253,200	40,000	3.50		
284,850	45,000	6.00		
325,000	51,340	15.80		Ultimate strength.
0	0	15.43		= 19.3 per cent.

Area at fracture, $4''.27 \times 1''.96 = 4.10$ square inches.

Contraction of area, 35.2 per cent.

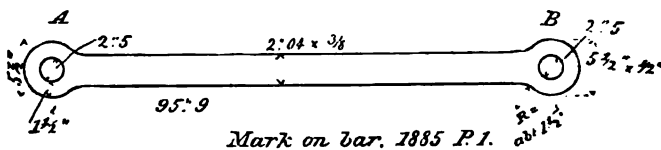
Elongation of 10-inch sections under strain of 45,000 pounds per square inch: ".76, ".75, ".75, ".75, ".75, ".75, ".74, ".75.

Elongation after fracture: $*2''.06, 1''.92, 1''.95, 2''.01, 1''.96, 1''.80, 1''.83, 1''.90$.

Fractured 6 inches outside of 80-inch section about 3 inches from face of dies. Appearance, fibrous.

TENSILE TESTS OF WROUGHT-IRON EYE BARS, ROLLED BY PHŒNIX IRON COMPANY.

509.

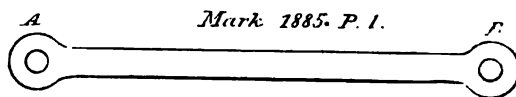


Sectional area, .765 square inch.
Gauged length, 70 inches.

Loads applied.	Elongation.	Set.	Remarks.
Pounds.	Inch.	Inch.	
2,000	.047		
15,000			
2,000		0.	

No elongation of eyes.

510.

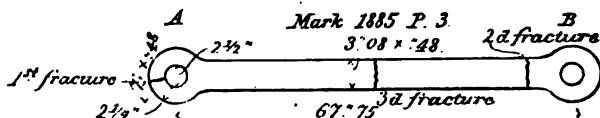


Same as 509.

Sectional area, $2'' .04 \times \frac{3}{8}'' = .765$ square inch.
Gauged length, 70 inches.

Loads.	Elongation.	Set.	Remarks.
Pounds.	Inch.	Inch.	
2,000	.044		
15,000			
2,000		0.	

511.



Sectional area, 1.478 square inches.
Gauged length, 50 inches.

Loads.	Elongation.	Set.	Remarks.
Pounds.	Inch.	Inch.	
2,000	.042		
30,000			
2,000		.003	

Loads.	Elongation.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
30,000	.042	.....
35,000	.049	.....
37,500	.052	.....
40,000	.054	.....
42,500	.057½	.....
44,000	.060	.....
45,000	.062	.....
46,000	.064	.....	Elastic limit=31,120 pounds per square inch.
47,500	.071	.....
48,500	.080	.....
50,000	.106	.....	Ultimate strength=40,600 pounds per square inch.
60,000	.....	.....

Broke through eye A; fibrous appearance.

Elongation, c. to c. of eyes, 2.71 inches, 4 per cent.

Elongation of eyes, A, .33 inch, B, .13 inch.

Again placed in the machine.

End B held by a pin.

End A held by friction dies.

Broke 7½ inches from center of eye B, on stem, through weld, at 68,900 pounds—46,620 pounds per square inch.

Fracture: granular, 50 per cent.; fibrous, 50 per cent.

Eye B elongated .22 inch total.

Both ends secured by friction dies.

Ultimate strength, 75,300 pounds=50,950 pounds per square inch.

Area, at fracture, 2" .87 × " .43 = 1.23 square inches.

Contraction, 16.8 per cent.

Fibrous fracture; bar uniformly drawn down.

512.

Mark, P. 3. 1885.

Same form as 511.

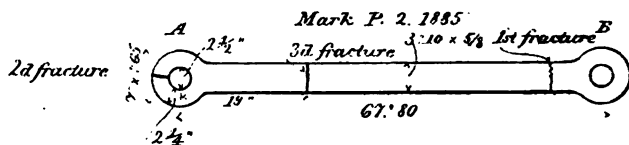
Sectional area, 3" .08 × " .49, = 15.09 square inches.

Gauged length, 50 inches.

Loads.	Elongation.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
2,000	.....	.....
30,000	.037	.....
2,000	.....	0.	
35,000	.043	.....
2,000	.....	.001	

Eyes elongated about .01 inch.

513.



Sectional area, 1.94 square inches.

Gauged length, 50 inches.

Loads.	Elongation.	Set.	Remarks.
Pounds.	Inch.	Inch.	
2,000	.037		
37,500			
2,000		0.	

Elastic limit, about 61,300 pounds=31,600 pounds per square inch.

Ultimate strength, 76,600 pounds=39,480 pounds per square inch.

Broke $7\frac{1}{2}$ inches from c. of eye B through weld.

Appearance of fracture fibrous.

Elongation, c. to c. of eyes, $2''.67=3.9$ per cent.

Elongation of eyes, A, .16 inch, B, .23 inch.

Again placed in machine. Pin in eye A. End B held by friction plates.

Broke on stem through eye A under strain of 78,500 pounds=40,460 pounds per square inch. Poor welding. Fibrous appearance.

Both ends held by friction dies.

Ultimate strength, 90,300 pounds=46,550 pounds per square inch.

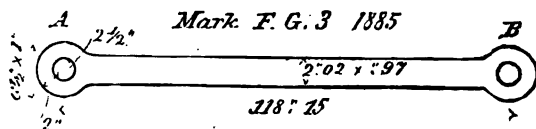
Area at fracture, $2''.88 \times 1''.58=1.67$ square inches.

Contraction, 13.9 per cent.

Fibrous fracture.

Bar uniformly drawn down.

514.



Sectional area, 1.959 square inches.

Gauged length, 90 inches.

Loads.	Elongation.	Set.	Remarks.
Pounds.	Inch.	Inch.	
2,000	.071		
40,000			
2,000		.008	

515.

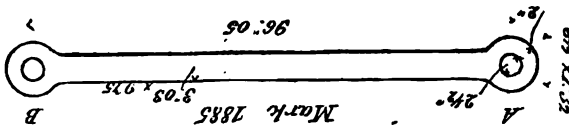
Mark, F. G. 3. 1885.

Same form as 514.

Sectional area, $2''.02 \times .97 = 1.959$ square inches.
 Gauged length, 90 inches.

Loads.	Elongation.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
2,000	.071		
40,000		0.	
2,000	.076		
45,000		0.	
2,000			

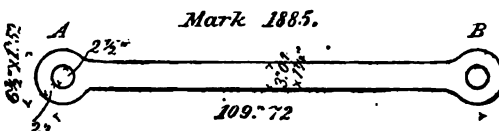
516.



Sectional area, 2.954 square inches.
 Gauged length, 75 inches.

Loads.	Elongation.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
2,000	.058		
60,000		0.	
2,000	.075		
80,000		.004	
2,000			

517.



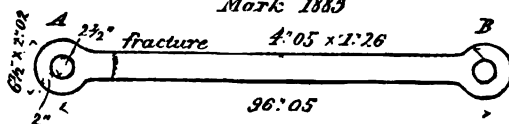
Sectional area, 3.8 square inches.
 Gauged length, 75 inches.

Loads.	Elongation.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
2,000	.057		
75,000		0.	
2,000			

TEST OF METALS.

518.

Mark 1885



Sectional area, 5.103 square inches.

Gauged length, 75 inches.

Loads.	Elongation.	Set.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	<i>Inch.</i>	
2,000			
100,000	.049		
2,000		0.	Rested about 17 hours.
100,000	.049		
125,000	.063		
135,000	.068		
140,000	.073		
145,000	.077		
150,000	.081		
155,000	.084		
159,200	.099		E. L. = 31,200 pounds per square inch.
238,400			Ultimate strength = 46,720 pounds per square inch.

Broke $8\frac{1}{2}$ inches from center of eye A through part affected by forming the head. Appearance of fracture: granular, 90 per cent.; fibrous, 10 per cent.

Elongation of eyes, A, .21 inch, B, .12 inch.

Elongation, c. to c. of eyes, $6''.70 = 7$ per cent.

Area at fracture, $3'' .86 \times 1'' .21 = 4.69$ square inches.

Contraction, 8.1 per cent.

Pins bent concave about .08 inch in 4 inches.

Indented about .02 inch.

EXPERIMENTS ON FRICTION.

WROUGHT IRON ON STEEL.

353.—BAR.

$3'' \times 4\frac{1}{2}''$.

As it came from the rolls, except that surface was rusty. Rust had removed all the scale.

Tensile strain applied in the direction of the rolling, but across the grain (made by planer) on the steel plates.

5" x 1½" steel plates next to the wrought iron.

Actual surface of contact, $4''.95 \times 4''.42 = 21,879$ square inches.

Holder loads.	Loads per square inch on specimen.	Pounds required to slip.	Coefficient of friction.	Remarks.
<i>Pounds.</i>				
21, 879	1, 000	11, 700	. 267	To start.
		11, 100	. 254	
		12, 300	. 281	
		25, 800	. 295	
43, 758	2, 000	25, 300	. 289	To start.
		28, 700	. 328	
21, 879	1, 000	16, 600	. 379	After standing 5 minutes.
		16, 300	. 372	To start.
		15, 300	. 349	Keeps up movement.
				More rapid movement.

Bar slipped 1 inch during the experiment.

As indicated, the quiescent friction is greater than the friction after sliding has begun. By increasing the speed of sliding the friction is reduced.

By allowing a few minutes rest the friction of starting is increased.

Steel plates abraded, owing doubtless to the unequal distribution of the pressure upon an undressed surface.

354.—BAR.

$$2'' \times 1\frac{1}{4}''.$$

Same condition as 353. Wrought iron on steel.

Between plates of same width as those in 353.

Surface of contact, $1''.9 \times 4''.95 = 9.4$ square inches.

Holder loads.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
<i>Pounds.</i> 37,600	4,000	20,200	.269	To start.
		19,400	.258	While in motion.
		24,600	.327	
		29,500	.392	

Bar slipped about 1 inch.

The true coefficients of friction are probably the first and second readings. As shown by the third and fourth, abrasion began to take place rapidly, increasing the friction.

When the specimen was removed from the machine, the outer end showed an indentation of .003 inch on one of the pressed faces.

355.—ROLLED PLATE OF WROUGHT IRON.

$$\frac{1}{4}'' \times 7\frac{3}{4}''.$$

Some rusty, but scale not flaked off more than 25 per cent.

Surface of contact, $7''.75 \times 7''.95 = 61.61$ square inches.

Holder loads.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
<i>Pounds.</i> 30,805	500	16,400	.266	To start.
		15,500	.251	
		21,400	.347	After slipping $\frac{1}{4}$ inch.

Steel plates abraded. Probably began when the slipping amounted to from $\frac{1}{8}$ to $\frac{1}{4}$ inch. Hence the third reading was taken after abrasion.

356.—ROLLED PLATE OF WROUGHT IRON.

".17×3".3.

Surface in good condition just as it left the rolls. About 5 per cent of surface rusty.

5"×1½" steel plates used above and below wrought iron.

Surface of contact, 4".95×3".26=16.137 square inches.

Holder loads.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
Pounds. 16, 137	1, 000	8, 550 8, 050 10, 400 11, 500	.265 .249 .322 .356	After ¼ inch slip, specimen took sudden jump. Sudden slip.

Pressure applied slowly, with friction determined as per the first reading. Immediately after slipping began, the reading fell to the second coefficient. From this time there was a gradual recovery of the friction until the third reading was taken. The slipping then amounted to ¼ inch, when specimen drew out very suddenly. Pressure again increased till specimen suddenly slipped under 11,500 pounds tension.

357.—ROLLED PLATE OF WROUGHT IRON.

Between steel plates.

Cartridge paper between contact surfaces.

Holder loads.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
Pounds. 16, 137	1, 000	13, 600 11, 400	.421 .353	From quiescence.

The slipping occurred between the paper and the steel plates.

358.—ROLLED PLATE OF WROUGHT IRON.

Between steel plates.

Wet (thoroughly soaked) cartridge paper between contact surfaces.

Holder loads.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
Pounds. 16, 137	1, 000	13, 600	.431	

When slipping began, the load was sustained nearly to its maximum limit, the specimen drawing away smoothly, without sudden jerks.
Paper still very damp after experiment.

359.

Same plate as used in 358.

Fresh surface.

Russia iron, about .002 inch thick, with smooth glazed surface in contact with wrought iron.

Holder loads.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
<i>Pounds.</i> 16, 137	1, 000	8, 960 9, 200 8, 000	.276 .285 .248	From quiescence. After this reading the strain continued; friction was reduced to the third reading.

Total slip about .10 inch.

360.—No change from 359, except increased holder pressure.

Holder loads.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
<i>Pounds.</i> 20, 000 25, 000 30, 000 35, 000 40, 000 40, 000 45, 000 50, 000	1, 240 1, 550 1, 860 2, 170 2, 480 2, 480 2, 790	11, 400 15, 200 18, 500 21, 900 22, 300 20, 000 22, 700	.285 .304 .308 .313 .280 .250 .252	Slipped $\frac{1}{8}$ inch. Slipped $\frac{1}{8}$ inch. Sudden slip. About the elastic limit of the plate. Continued slipping. Broke wrought-iron bar, 22,300 pounds.

When a tensile strain approaching the elastic limit of the plate was reached, the specimen suddenly slipped in the holder dies. Slipping continued till rupture of plate. Fibrous appearance at fracture. Broke close to dies at ends which had been allowed to slip.

Ultimate strength, about 22,300 pounds=39,750 pounds per square inch.

The low coefficient at the second reading of 40,000 pounds, and at the reading of 50,000 pounds, is thought to arise from the fact that the holder pressure was increased while the specimen was under tension.

361.—WROUGHT-IRON BAR.

56" \times 2".51 \times 1".23.

Sectional area, 3.09 square inches.

Friction surface, 2".37 \times 7".45=17.66 square inches.

Scale on bar entirely removed by rust.

WROUGHT IRON ON STEEL.

Mark on bar, S. & H. \oslash best.

Holder pressure.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
<i>Pounds.</i> 17, 660 35, 320	1, 000 2, 000	{ 11, 900 10, 100 24, 000	.337 .296 .340	

Holder pressure.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
<i>Pounds.</i>				
52,980	3,000	23,200	.326	Continued slipping.
		36,700	.347	
		34,300	.324	
		35,000	.330	
70,640	4,000	49,100	.348	
		47,100	.334	
88,500	5,000	62,600	.355	
		60,000	.340	
		66,500	.377	Total slip to this time, .25 inch. A abrasion probably began. Elastic limit.
105,960	6,000	90,300	.426	Sudden slip; slipping with shock to machine.
		95,500	.451	Do.
240,000				
105,960	6,000	99,200	.468	Holder pressure increased while specimen was under strain. Slipped about $\frac{1}{2}$ inch at once. Loads released before increasing holder pressure.
123,620	7,000	125,300	.507	
141,280	8,000	124,000	.489	
		124,600	.441	
158,940	9,000	131,600	.414	
176,600	10,000	136,400	.386	
176,600	10,000	138,900	.393	
Load removed from specimen and specimen taken from machine. It was found that by stretching and drawing down after the elastic limit had been passed, the metal had left a shoulder behind the steel plates that is thought to have materially increased the apparent friction of the plates and specimen. This shoulder cut away and the bar replaced in the machine as before.				
105,960	6,000	94,100	.444	Stretching did not begin till load had passed 141,500 pounds.
176,600	10,000	141,400	.400	
194,280	11,000	142,500	.387	
201,920	12,000	142,900	.354	
229,580	13,000	142,800	.311	

Ultimate strength of specimen, 143,000 pounds = 46,280 pounds per square inch.

Total elongation, 3.49 inches in 20 inches = 17.4 per cent.

Area at fracture, $2''.21 \times 1''.03 = 2.29$ square inches.

Contraction of area, 25.9 per cent.

Appearance of fracture, fibrous; granular spot about 5 per cent.

Broke close to movable holder face outside of 20-inch gauged section.

362.—WROUGHT IRON AND STEEL.

Same wrought-iron bar as used in 353.

Between $7\frac{1}{2}'' \times 1\frac{1}{2}''$ steel plates.

Surface in contact, approximately 33 square inches.

Sectional area of bar, $4''.52 \times 1''.75 = 3.39$ square inches.

Holder loads.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
<i>Pounds.</i>				
16,500	500	12,800	.388	
67,000	*2,000	47,900	.357	
100,000	3,000	71,400	.357	
140,000	4,000	102,000	.364	
173,000	5,000	137,200	.386	Sudden slip with loud report.
				Sudden slip, about 2 inches, with loud report.
208,000	6,000	162,200	.390	Sudden slip, about 3 inches, with loud report.
241,000	7,000			

* About.

Elastic limit, about 103,000 pounds = 32,150 pounds per square inch.

Ultimate strength, 169,200 pounds = 49,910 pounds per square inch.

Fractured outside of gauged length. Fibrous, 55 per cent.; granular, 45 per cent.

Elongation for gauged length, 2.39 inches in 20 inches = 11.9 per cent.

Area at fracture, $4''.29 \times 1''.67 = 2.87$ square inches.

Contraction of area, 15.3 per cent.

363.—WROUGHT-IRON BAR.

Same bar as used in 353.

Very rusty surfaced; removed by draw-filing, finishing about 85 per cent. of the surfaces of contact.

Steel plates on each side, $7\frac{1}{2}'' \times 1\frac{1}{2}''$.

Total length of bar, 49 inches.

Sectional area, $2''.02 \times 1''.27 = 2.56$ square inches.

Frictional surface of contact, $1''.9 \times 7''.45 = 14.16$ square inches.

Holder loads.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
<i>Pounds.</i>				
14,160	1,000	8,250	.231	
85,000	6,000	48,600	.286	
114,000	8,000	61,600	.270	
142,000	10,000	74,800	.263	
156,200	11,000	82,400	.289	
170,000	12,000	95,100	.280	
184,000	13,000	103,800	.282	Rapid stretching began at 83,400 pounds. Total slip, .02 inch.

At 136,000 pounds tension fracture began at one corner of the bar, which opened about 10 inches deep at corner before rupture.

Ultimate strength, 136,400 pounds = 53,280 pounds per square inch.

Broke 14 inches from face of dies.

Fracture fibrous; three small granular spots (area of the three, about $\frac{1}{4}$ square inch) on opposite side to beginning of fracture. Bar had received a hammer blow, making a slight indentation at point of fracture. Cracks developed at other places where metal had been indented.

Total elongation (including fracture), 3.9 inches in 20 inches = 19.5 per cent.

Area at fracture, $1''.8 \times 1''.09 = 1.96$ square inches.

Contraction of area, 23.5 per cent.

Specimen drew down in the dies to 1.18 inches and 1.20 inches in thickness, and slipped on steel without causing abrasion of the metal.

364.—CAST IRON ON STEEL.

Planed surfaces.

Cast-iron parallel, $66'' \times 4'' \times 1\frac{1}{2}''$ between $7\frac{1}{2}'' \times 1\frac{1}{2}''$ steel plates.

Frictional surface of contact, $7''.45 \times 4'' = 29.8$ square inches.

Surfaces cleaned with alcohol: slipping with the grain of cast iron across the grain of steel.

Holder loads.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
<i>Pounds.</i>				
15,000	500	{ 5,650 4,800	.188 .160	
30,000	1,000	{ 10,800 9,600	.180 .160	

Holder loads.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
<i>Pounds.</i>				
90,000	2,000	{ 20,800	.173	
		{ 18,800	.157	
90,000	3,000	{ 30,800	.171	
		{ 29,000	.161	
120,000	4,000	{ 39,500	.185	
		{ 38,500	.152	
150,000	5,000	{ 51,200	.171	
		{ 49,400	.165	
150,000	5,000	45,500	.151	Specimen struck repeatedly with wooden mallet.
120,000	4,000	40,800	.170	Hammered.
	4,000	37,200	.155	
90,000	3,000	34,200*	.190	Reading taken. Load released
90,000	3,000	34,400*	.191	and applied again. Total slip,
120,000		45,700*	.190	.4 inch.

Hammering done with a carpenter's hand mallet.

The surfaces evidently underwent a change before the readings marked with a * were taken. Up to this time the slip, when it occurred, took place smoothly, the pressure running down without any noise or report from the specimen. The slip for the marked readings took place suddenly and with a slight report.

Appearance of steel after experiment, bright polished with shallow fine scratches. Cast iron apparently unchanged.

365.—SAME CAST-IRON PARALLEL AND SAME SURFACE AS IN 364.

Same steel plates, but with fresh surface.

Holder loads.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
<i>Pounds.</i>				
90,000	3,000	34,100	.189	
Cartridge paper introduced between cast iron and steel.				
90,000	3,000	55,800	.311	
60,000	2,000	29,800	.248	Load released after taking reading.
60,000	2,000	30,200	.252	
90,000	3,000	43,200	.240	
		{ 43,800	.243	
		{ 40,000	.222	
90,000	3,000	{ 39,000	.217	
		{ 38,900	.222	

The experiment shows how materially the friction from quiescence is raised by using paper between the rubbing surfaces. The maximum effect is displayed by the resistance to the first slipping. When that has been accomplished, and slipping has been continued through a limited distance—about one-sixteenth of an inch—the friction is considerably reduced.

Slipping took place between the paper and steel, that is, the paper moved along with the cast iron.

366.—CAST-IRON AND STEEL PLATES.

Same as in 365, except that cartridge paper was removed.

Holder loads.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
<i>Pounds.</i>				
80,000	2,000	20,000	.167	
90,000	3,000	32,400	.180	
Holder pressure released. Contact surfaces wet with water.				
80,000	2,000	23,600	.197	
90,000	3,000	33,700	.187	
Wet cartridge paper placed between surfaces.				
60,000	.....	30,000	.325	Difficult to say when slipping began with this load on the holder,
		30,000	.250	
but it probably began below 30,000 pounds tension on the specimen. As the pressure was increased slow slipping occurred till 30,000 pounds tension was reached. Then rapid slipping occurred, the tension being reduced to 30,000 pounds, when the experiment was concluded.				
Paper carried along with the cast iron as in the last experiment (365).				

367.—WROUGHT IRON ON CAST IRON.

Wrought-iron rolled bar $59'' \times 2'' \times \frac{5}{8}''$. Surface very rusty.

Friction surface draw filed finishing about 85 per cent. of the surface of contact.

Cast-iron 2-inch dies in contact with wrought iron.

Dies used in direction of planing.

Sectional area of wrought-iron bar, $2'' .09 \times 1'' .63 = 3.4$ square inches.

Friction surface, $16'' \times 2'' = 32$ square inches.

Holder loads.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
<i>Pounds.</i>				
16,000	500	6,800	.213	
		6,700	.209	
32,000	1,000	14,900	.233	
48,000	1,500	22,300	.232	
20,000	625	.....	.....	Rested over noon.
64,000	2,000	34,700	.271	
32,000	1,000	19,500	.305	Slipped suddenly; each load up to this point slipping gradually.
64,000	2,000	35,600	.278	
96,000	3,000	About 41,000 to 43,000	.214	
64,000	2,000		.223	
64,000	2,000	36,400	.284	Slipped suddenly.
16,000	500	10,200	.319	Slipped suddenly.

368.—WROUGHT IRON ON CAST IRON.

Bar of same dimensions as that used in 367. Rough surface as the bar came from the rolls. Cast-iron (charcoal) dies used as in 367.

Holder loads.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
<i>Pounds.</i>				
16,000	500	7,600	.238	
32,000	1,000	About 10,000	.156	
			.148	
64,000	20,000	23,200	.181	
96,000	3,000	33,700	.176	
		25,000	.130	
64,000	2,000	18,300	.143	
		18,100	.141	
32,000	1,000	9,400	.147	
16,000	500	4,300	.134	Total amount, slipped 1 inch.

369.—CAST IRON ON CAST IRON.

66 inches parallel and 2-inch die plates.

Friction surface, $16'' \times 4'' = 64$ square inches.

Planing of parallel and plates in same direction—parallel to axis of testing machine.

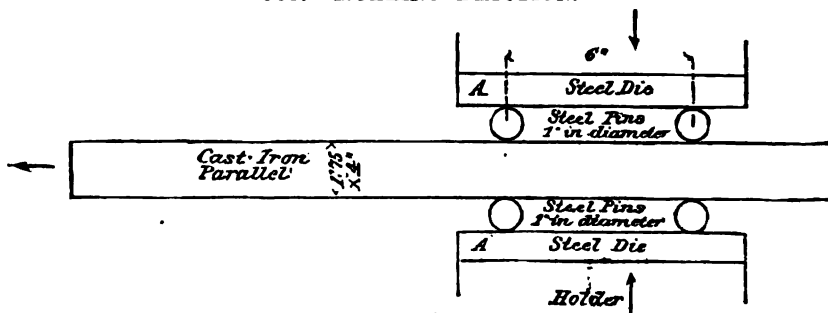
Holder loads.	Pounds per square inch.	Pounds to slip.	Coefficient of friction.	Remarks.
<i>Pounds.</i>				
16,000	250	5,300	.166	
		4,800	.150	
32,000	500	10,400	.163	
		9,600	.150	
64,000	1,000	19,600	.153	
		18,600	.145	
128,000	2,000	37,300	.146	
		35,000	.137	
16,000	250	4,800	.150	
64,000				Rested over night, 15 hours.
46,000				Pressure in the morning.
64,000	1,000	19,800	.155	
		19,000	.148	
128,000	2,000	39,200	.153	
		37,000	.145	
192,000	3,000			Loaded, but readings not taken. No
				slippings of specimen.
128,000	2,000	41,600	.162	
		37,200	.145	
		5,300	.166	
16,000	250	5,200	.163	Hammered.
		5,200	.163	
		10,800	.168	
32,000	500	16,600	.164	
		10,500	.164	Hammered.

Total slip of specimen, $1\frac{1}{2}$ inches.

The surfaces in contact had slightly polished appearance after completion of experiment.

No indications of abrasion.

505.—ROLLING FRICTION.



ONE-INCH STEEL ROLLERS IN STATIONARY HOLDER.

Cast iron rolling on steel.

Holder loads.	Resistance.	Coefficient.	Remarks.
<i>Pounds.</i>	<i>Pounds.</i>		
10,000	165	.00825	Surface smoothly planed.
	180	.00900	
15,000	300	.01083	
	450	.01125	
20,000	485	.01212	Front rolls $3\frac{1}{4}$ inches from face of holder.

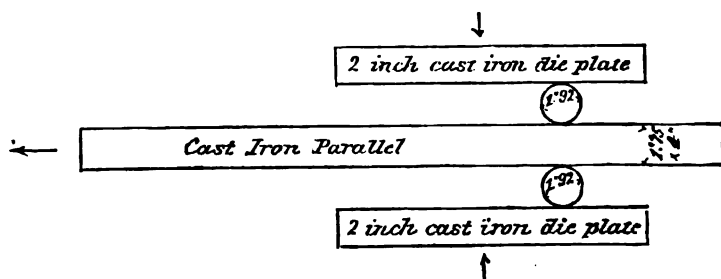
Holder loads.	Resistance.	Coefficient.	Remarks.
<i>Pounds.</i>	<i>Pounds.</i>		
15,000 {	300	.01000	
10,000 {	308	.01026	
23,000 {	70	.00350	
20,000 {	280	.00700	
20,000 {	280	.00700	
20,000 {	340	.00850	
20,000 {	480	.01200	
20,000 {	240	.00600	Adjusted rolls. Rolls 2 inches from face of holder. Rolls run back in holder.
10,000 {	260	.00650	
25,000 {	88	.00140	
30,000 {	100	.00500	
30,000 {	485	.00970	
30,000 {	580	.00967	
30,000 {	690	.01150	

506.—TWO-INCH CAST-IRON PLATES SUBSTITUTED FOR STEEL PLATES A.

CAST IRON ON CAST IRON.—STEEL ROLLS.

Holder loads.	Resistance.	Coefficient.	Remarks.
<i>Pounds.</i>	<i>Pounds.</i>		
20,000 {	430	.01075	Surface smoothly planed.
20,000 {	440	.01100	
20,000 {	500	.01250	} Rollers not parallel. Rollers adjusted.
20,000 {	550	.01375	
20,000 {	180	.00450	
20,000 {	180	.00450	
20,000 {	200	.00500	
30,000 {	500	.00833	
20,000 {	600	.01000	
20,000 {	300	.00750	
30,000 {	450	.00750	
20,000 {	490	.00817	
20,000 {	200	.00500	
20,000 {	180	.00450	
20,000 {	140	.00350	
30,000 {	180	.00450	
15,000 {	430	.00717	
10,000 {	80	.00286	
10,000 {	120	.00400	
20,000 {	40	.00200	At end of experiment rolls were slightly marked by the cast iron, enough to remove turning marks.
20,000 {	200	.00500	
20,000 {	220	.00550	

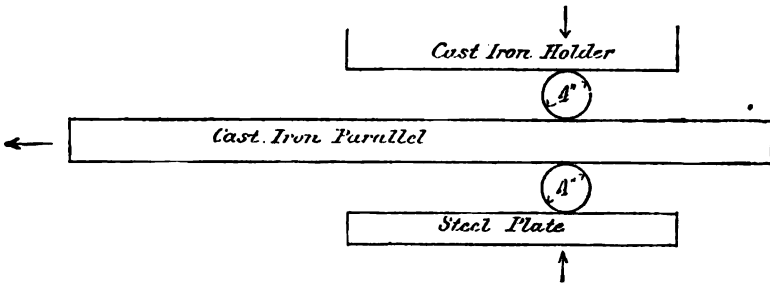
507.—CAST IRON ON CAST IRON. CAST-IRON ROLLERS.



Holder loads.	Resistance.	Coefficient.	Remarks.
<i>Pounds.</i>	<i>Pounds.</i>		
5,000	{ 60	.00600	Surfaces smoothly planed.
	{ 62	.00620	
10,000	{ 120	.00600	
	{ 135	.00675	
	{ 170	.00567	
15,000	{ 178	.00593	Length of stroke about 10 inches. At end of stroke of parallel. New stroke began.
	{ 280	.00700	
20,000	{ 400	.01000	
	{ 165	.00550	
15,000	{ 185	.00617	
16,000	{ 220	.00687	At end of stroke. New stroke.
10,000	{ 40	.00200	
	{ 52	.00260	
15,000	{ 70	.00233	
	{ 123	.00410	
15,000	{ 80	.00267	At end of stroke. New stroke.
	{ 100	.00333	
10,000	{ 25	.00125	
	{ 30	.00150	
	{ 50	.00167	
15,000	{ 80	.00267	At end of stroke. New stroke.
	{ 110	.00367	
15,000	{ 75	.00250	
	{ 95	.00317	
10,000	{ 26	.00130	
15,000	{ 66	.00200	End of stroke. At half stroke. End of stroke.
	{ 110	.00366	
	{ 66	.00200	
15,000	{ 110	.00367	
	{ 90	.00300	

* About.

508.—CAST IRON ROLLING BETWEEN CAST IRON AND STEEL, ON FOUR-INCH CAST IRON ROLLERS.



Holder loads.	Resistance.	Coefficient.	Remarks.
<i>Pounds.</i>	<i>Pounds.</i>		
5,000	39	.00300	Surfaces smoothly planed.
	38	.00380	
	25	.00250	
	38	.00380	
	65	.00325	
10,000	80	.00400	
	50	.00250	End of stroke. Length about 12 inches.
	35	.00175	
10,000	60	.00300	
	35	.00175	
	55	.00275	End of stroke.
10,000	42	.00210	
	60	.00300	End of stroke.
Resistance to rolling seems to be affected materially by the roundness of the rolls; that is, when the major diameter of the rolls would bring an increased holder pressure, the maximum readings are obtained. The true coefficient probably in the last stroke run is due to a resistance of 45 to 48 pounds.			
15,000	90	.00300	
	115	.00383	
	70	.00233	
15,000	60	.00200	New stroke.
	85	.00283	
Owing to the difficulty of maintaining constant holder pressure, three sheets of cartridge paper put under steel die plate.			
15,000	66	.00220	New stroke.
	105	.00350	
Paper removed from under plates.			
20,000	90	.00225	New stroke began.
	120	.00300	
25,000	125	.00250	
	165	.00330	
25,000	105	.00210	New stroke.
	140	.00280	
30,000	170	.00283	
	210	.00350	
	190	.00317	New stroke.
30,000	250	.00417	
	170	.00283	
	250	.00417	
	200	.00288	New stroke.
35,000	300	.00429	
	320	.00457	
	380	.00543	
15,000	60	.00200	New stroke.
	80	.00287	
40,000	360	.00450	
	420	.00502	
15,000	70	.00233	
	100	.00333	

* Minimum.

SUMMARY OF EXPERIMENTS 505-508 ON ROLLING FRICTION.

The resistance to rolling in the above experiments shows how sensitive this class of friction is to the conditions of the surfaces in contact, rollers not turned round and the slight irregularities of smoothly planed surfaces causing great variations in the coefficient of friction at different positions of the rollers.

The results therefore indicate the maximum and minimum resistance met with. A mean of the readings taken would appear to be more valuable for the purpose of comparing the effect of different sized rollers and different metals than for furnishing coefficients for practical application, which would require either the employment of the maximum coefficient in computing resistance offered, or the minimum coefficient in getting the stability of any structure resting on rollers.

While experiment 507 was in progress the rollers were marked to indicate their position while offering the greatest resistance. Measuring the diameters after the experiment, it was found that the rollers were from .003 inch to .005 inch out of round, accounting for the increased resistance when the rollers were in contact at the major diameters. It is observed that with the 1-inch steel rolls the coefficient averaged highest the first time they were run over the plates.

TABULATION OF 505.

CAST IRON ROLLING ON STEEL.

Four one-inch steel rollers.

Total loads on rollers.	Loads per linear inch on rollers.	Coefficients.			Remarks.
		Maximum.	Minimum.	Mean.	
<i>Pounds.</i>	<i>Pounds.</i>				
10,000	1,250	.00900	.00350	.00625	One observation.
15,000	1,875	.01083	.01000	.01016	
20,000	2,500	.01212	.00800	.00906	
25,000	3,125	.00970	.....	.....
30,000	3,750	.01150	.00967	.01058	

506.—CAST IRON ON CAST IRON.

Four one-inch steel rollers.

Total loads on rollers.	Loads per linear inch on rollers.	Coefficients.			Remarks.
		Maximum.	Minimum.	Mean.	
<i>Pounds.</i>	<i>Pounds.</i>				
10,000	1,250	.00200	One observation.
15,000	1,875	.00400	.00286	.00333	
20,000	2,500	.01100	.00350	.00725	
30,000	3,750	.01000	.00717	.00858	

507.—CAST IRON ON CAST IRON.

Two cast-iron rollers of 1.92 inches diameter.

Total loads on rollers.	Loads per linear inch on rollers.	Coefficients.			Remarks.
		Maximum.	Minimum.	Mean.	
<i>Pounds.</i>	<i>Pounds.</i>				
5,000	1,250	.00820	.00800	.00810	
10,000	2,500	.00875	.00125	.00400	
15,000	3,750	.00593	.00167	.00380	
20,000	5,000	.01000	.00700	.00850	Coefficient indicates that 5,000 pounds overloads the rollers.

508.—CAST IRON ON CAST IRON.

CAST IRON ON STEEL.

Two four-inch cast-iron rollers.

Total loads on rollers.	Loads per linear inch on rollers.	Coefficients.			Remarks.
		Maximum.	Minimum.	Mean.	
<i>Pounds.</i>	<i>Pounds.</i>				
5,000	1,250	.00380	.00250	.00315	
10,000	2,500	.00400	.00175	.00287	
15,000	3,750	.00383	.00200	.00241	
20,000	5,000	.00300	.00225	.00262	
25,000	6,250	.00330	.00210	.00270	
30,000	7,500	.00417	.00283	.00350	
35,000	8,750	.00543	.00286	.00414	
40,000	10,000	.00502	.00450	.00476	} Rollers evidently over- loaded.

So far as direct comparison of the above experiments may be made, the average resistance in each experiment would give the following coefficients:

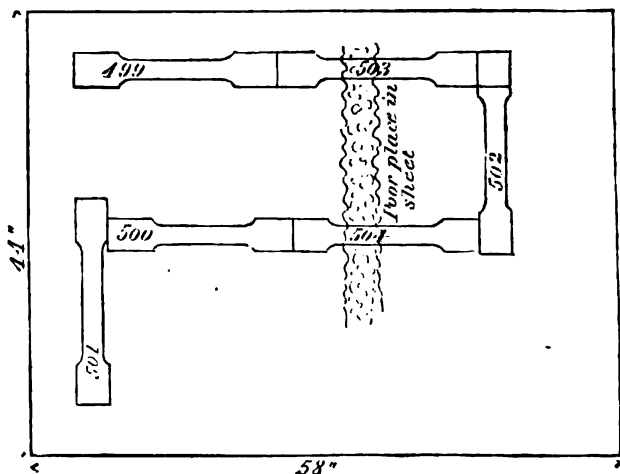
	Rollers.	Coefficient.
Experiment 505	1 inch.	.00901
506	1 inch.	.00639
507	1.92 inches.	.00463
508	4 inches.	.00275

The coefficients diminish a little less rapidly than the diameters of the rollers increase.

TENSILE TESTS OF WROUGHT-IRON BOILER PLATE.

Sheet taken from cylindrical part of the testing-machine boiler below the water line.

Boiler built in 1864.



Sketch showing relative positions of specimens in the sheet.

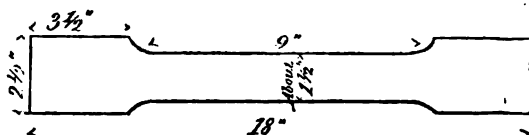
Specimens 499 and 500 cut out with the grain.

Specimens 501 and 502 cut out across the grain.

Specimens 499-502 taken out of sheet where the metal was in good condition, not very much destroyed by the rust.

Specimens 503, 504 were cut out with the grain, but were from that part of the sheet which was considerably reduced in thickness by corrosion.

Form of specimens.



The middle part of each specimen spaced off into inch sections.

499.—SECTIONAL AREA, $1''.457 \times 1''.31 = .45$ square inch.

Elastic limit, about 14,200 pounds = 31,550 pounds per square inch.

Ultimate strength, 19,250 pounds = 42,780 pounds per square inch.

Elongation, $1''.45$ in $9'' = 5$ per cent.

Area at fracture, $1''.39 \times 1''.28 = .39$ square inch.

Contraction of area, 13.3 per cent.

Inch sections after fracture: $1''.19^*$, $1''.04$, $1''.05$, $1''.02$, $1''.03$, $1''.03$, $1''.03$, $1''.02$, $1''.04$.

Specimen tore apart, opening seam through the middle, water side giving way first.



500.—SECTIONAL AREA, $1''.476 \times '' .33 = .49$ square inches.

Elastic limit, about 14,400 pounds = 29,390 pounds per square inch.

Ultimate strength, 22,910 pounds = 46,750 pounds per square inch.

Elongation, $'' .91$ in $9'' = 10.1$ per cent.

Area at fracture, $1''.4 \times '' .29 = .41$ square inches.

Contraction of area, 16.3 per cent.

Inch sections after fracture: $1''.08$, $1''.11$, $1''.06$, $1''.12$, $1''.07$, $1''.09$, $1''.11$, $1''.18$,* $1''.09$.

501.—SECTIONAL AREA, $1''.483 \times '' .34 = .50$ square inch.

Elastic limit, about 14,600 pounds = 29,200 pounds per square inch.

Ultimate strength, 20,500 pounds = 41,000 pounds per square inch.

Elongation, $'' .37$ in $9'' = 4.1$ per cent.

Area at fracture, $1''.47 \times '' .33 = .49$ square inch.

Contraction of area, 2 per cent.

Inch sections after fracture: $1''.10^*$, $1''.03$, $1''.02$, $1''.06$, $1''.02$, $1''.03$, $1''.04$, $1''.02$, $1''.05$.

Tore apart in two places; in first inch section at outside of 9-inch space at neck of specimen.

502.—SECTIONAL AREA, $1''.470 \times '' .33 = .49$ square inch.

Elastic limit, about 13,800 pounds = 28,160 pounds per square inch.

Ultimate strength, 17,150 pounds = 35,000 pounds per square inch.

Elongation, $'' .21$ in $9'' = 2.3$ per cent.

Area at fracture, $1''.45 \times '' .33 = .48$ square inch.

Contraction of area, 2 per cent.

Inch sections after fracture: $1''.01$, $1''.01$, $1''.02$, $1''.01$, $1''.03$, $1''.01$, $1''.02$, $1''.02$, $1''.08^*$.

503.—SECTIONAL AREA (THROUGH WEAKEST PART), $1''.475 \times '' .27 = .40$ square inch.

Elastic limit not well defined.

Ultimate strength, 17,620 pounds = 44,050 pounds per square inch.

Elongation, $'' .49$ in $9'' = 5.4$ per cent.

Area at fracture, $1''.41 \times '' .23 = .32$ square inch.

Contraction of area, 20 per cent.

Inch sections after fracture: $1''.04$, $1''.02$, $1''.06$, $1''.05$, $1''.05$, $1''.17^*$, $1''.03$, $1''.04$, $1''.03$.

Thinnest place, before test, $.23$ inch.

Contraction of area uncertain, owing to the very irregular section of the specimen.

504.—SECTIONAL AREA (THROUGH WEAKEST PART), $1''.432 \times '' .27 = .37$ square inch.

Elastic limit (not very well defined), about 11,000 pounds = 29,729 + pounds per square inch.

Ultimate strength, 16,700 pounds = 45,130 pounds per square inch.

Elongation, $'' .51$ in $9'' = 5.6$ per cent.

Area at fracture, $1''.38 \times '' .24 = .33$ square inch.

Contraction in area, 10.8 per cent.

Inch sections after fracture: 1''.02, 1''.03, 1''.07, 1''.03, 1''.03, 1''.04, 1''.04, 1''.11, 1''.14*.

Thinnest place before test, .24 inch.

NOTE.—Fractures of specimens 499 to 504 inclusive, dark fibrous. Metal appeared very much disintegrated, layers of metal having apparently little cohesion, suggesting imperfect welding in the metal originally, or separation of the layers from the vibration in the boiler.

Diameter of shell of boiler, 48 inches.

Working strain pressure, 80 pounds per square inch above atmosphere.

This boiler had been seriously overheated, burning the plate next this, which was patched in consequence.

WROUGHT-IRON BARS. TENSILE TESTS.

Welded after having been broken of tensile strain.

No. 350.

Rough bar $\frac{3}{4}$ inch diameter turned down at middle to .576 inch diameter and 4 inches long.

Ultimate strength, 12,230 pounds=47,040 pounds per square inch.

Elongation after fracture, 1''.04 in 3''=34.6 per cent.

Contraction of area, 49.2 per cent.

Fibrous appearance at fracture.

FRACTURED ENDS SCARF WELDED.

Diameter of specimen, .55 inch.

Sectional area, .238 square inch.

Ultimate strength, 10,800 pounds=45,380 pounds per square inch.

Fibrous fracture, resembling charcoal in appearance.

Fractured square across bar at end of weld.

SPECIMEN AGAIN SCARF WELDED.

Diameter, .52 inch.

Sectional area, .212 square inch.

Ultimate strength, 9,500 pounds=44,810 pounds per square inch.

Fractured along line of weld, leaving smooth faces of fracture.

No. 351.—ROUGH BAR.

Sectional area, 1''.03 \times ''.44=.453 square inch.

Ultimate strength, 23,920 pounds=52,800 pounds per square inch.

Loads during the test applied very gradually. Time of test, 25 minutes.

Specimen welded and again tested.

Ultimate strength, 21,500 pounds.

Fracture fibrous, beginning at end of scarf, but not following line of weld.

No. 352.—ROUGH BAR CUT OFF SAME PIECE AS No. 351.

Sectional area, 1''.03 \times ''.44=.453 square inches.

Ultimate strength, 24,100 pounds=53,200 pounds per square inch.

Time of test, 1 minute.

Fibrous fracture.

SPECIMEN WELDED AND AGAIN TESTED.

Ultimate strength, 21,500 pounds.

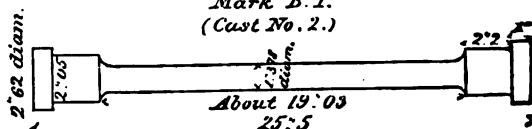
Fibrous fracture, taking place 4 inches from weld, the weld not disturbed.

TENSILE TESTS OF (CAST) GUN IRON.

SPECIMENS FROM SOUTH BOSTON IRON COMPANY.

724.

Mark B.1.
(Cast No. 2.)



Sectional area, 1.49 square inches.

Gauged length, 18 inches.

Loads applied.	Elongation.	Set.	Remarks.
Pounds.	Inch.	Inch.	
0			
1,000			
2,000	.0005		
3,000	.001		
4,000	.002	0.	
5,000	.0025	0.	
6,000	.0025	0.	
7,000	.003	0.	
8,000	.0035	0.	
9,000	.004	0.	
10,000	.0045	0.	
11,000	.006	.0005	
12,000	.0065	.0005	
13,000	.007	.0005	
14,000	.0075	.0005	Returned to zero after each load to find permanent set.
15,000	.0090	.0005	
16,000	.0090	.0005	
17,000	.0105	.001	
18,000	.0110	.001	
19,000	.0120	.0015	
20,000	.0135	.0015	
21,000	.0140	.0015	
22,000	.0150	.0015	
23,000	.0165	.002	
24,000	.0175	.002	
25,000	.0190	.003	
26,000	.0200	.0035	
27,000	.0210	.0040	
28,000	.0235	.0050	
29,000	.0250	.0050	
30,000	.0265	.0055	
32,000	.0310	.0080	
34,000	.0350	.0110	
36,000	.0420	.0150	
38,000	.0500	.0220	
40,000			=26,850 pounds per square inch; ultimate strength.

Fractured $1\frac{1}{4}$ inch from shoulder.

H. Ex. 12—16

725.

Mark, B. 2. Cast, No. 3. Same form as 724.

Diameter, 1.345 inch.

Sectional area, 1.42 square inches. Gauged length, 18 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
Pounds.		Inch.	Inch.	
0	0			
1,420	1,000			
0	0			New gaugings began. Loads released after each 1,000 pounds per square inch; increment and set determined when the specimen was under no strain.
1,420	1,000	.0013	0.	
2,840	2,000	.0024	0.	
4,260	3,000	.0034	.0002	
5,680	4,000	.0045	.0003	
7,100	5,000	.0055	.0003	
8,520	6,000	.0064	.0004	
9,940	7,000	.0073	.0004	
11,360	8,000	.0084	.0005	
12,780	9,000	.0094	.0006	
14,200	10,000	.0104	.0007	
15,620	11,000	.0114	.0008	
17,040	12,000	.0126	.0011	
18,460	13,000	.0137	.0012	
19,880	14,000	.0150	.0014	
21,300	15,000	.0161	.0016	
22,720	16,000	.0173	.0017+	
24,140	17,000	.0187	.0022	
25,560	18,000	.0200	.0025	
26,980	19,000	.0215	.0028	
28,400	20,000	.0232	.0034	
29,820	21,000	.0247	.0039	
31,240	22,000	.0266	.0046	
32,660	23,000	.0286	.0055	
34,080	24,000	.0307	.0068	
35,500	25,000	.0337	.0086	
36,920	26,000	.0366	.0099	
38,340	27,000	.0406	.0127	
39,760	28,000	.0465	.0170	
41,180	29,000	.0534	.0224	
42,600	30,000	.0620	.0290	
				Ultimate strength.

Fractured at shoulder.

726.

Mark, B. (Cast, No. 1) 3 block. Same form as 724.

Diameter, 1.380 inches.

Sectional area, 10.5 square inches.

Gauged length, 18 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
Pounds.		Inch.	Inch.	
0	0			
1,500	1,000	.0006	.0006—	
3,000	2,000	.0022	.0008	
4,500	3,000	.0035	.0010	
6,000	4,000	.0046	.0011	
7,500	5,000	.0056	.0012+	
9,000	6,000	.0068	.0014	
10,500	7,000	.0080	.0015	
12,000	8,000	.0093	.0016	
13,500	9,000	.0104	.0017	
15,000	10,000	.0116	.0021	

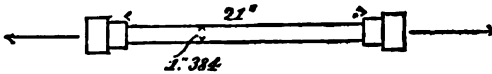
Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
16,500	11,000	.0129	.0024	
18,000	12,000	.0144	.0026	
19,500	13,000	.0158	.0030	
21,000	14,000	.0175	.0034	
22,500	15,000	.0192	.0040	
24,000	16,000	.0212	.0046	
25,500	17,000	.0230	.0052	
27,000	18,000	.0255	.0066	
28,500	19,000	.0284	.0082	
30,000	20,000	.0319	.0104	
31,500	21,000	.0369	.0139	
33,000	22,000	.0454	.0205	
34,500	23,000	.0533	.0273	
36,000	24,000	.0679	.0400	
37,500	25,000	.0899	.0602	
39,000	26,000	.....	.....	Ultimate strength.

Fractured at shoulder.

TENSILE TEST OF GUN IRON FROM SOUTH BOSTON IRON COMPANY.

1006.

Mark on specimen: No. 4, Block B, May 6, 1881.



Sectional area, 1.5 square inches.

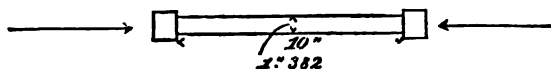
Gauged length, 20 inches.

Loads applied.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
0	0	Loads released to zero after each increment of 1,000 pounds per square inch.
1,500	1,000	.0002	0.	
3,000	2,000	.0012	0.	
4,500	3,000	.0020	0.	
6,000	4,000	.0032	.0002	
7,500	5,000	.0045	.0005	
9,000	6,000	.0053	.0006	
10,500	7,000	.0065	.0006	
12,000	8,000	.0075	.0006	
13,500	9,000	.0088	.0006	
15,000	10,000	.0100	.0010	
16,500	11,000	.0110	.0010	
18,000	12,000	.0126	.0012	
19,500	13,000	.0136	.0012	
21,000	14,000	.0150	.0015	
22,500	15,000	.0160	.0015	
24,000	16,000	.0175	.0015	
25,500	17,000	.0186	.0020	
27,000	18,000	.0200	.0020	
28,500	19,000	.0220	.0025	
30,000	20,000	.0236	.0028	
31,500	21,000	.0256	.0030	
33,000	22,000	.0275	.0040	
34,500	23,000	.0300	.0050	
36,000	24,000	.0326	.0062	
37,500	25,000	.0360	.0080	
39,000	26,000	.0395	.0100	
40,500	27,000	.0450	.0136	
42,000	28,000	.0525	.0190	
43,500	29,000	.0610	.0280	
45,000	30,000	.0755	.0390	Ultimate strength.
45,050	30,030	.....	.....

Fractured $3\frac{1}{4}$ inches from shoulder.

COMPRESSION OF GUN IRON FROM SOUTH BOSTON IRON COMPANY.

1007.

Mark. No. 4 Block A. May 6. 1881

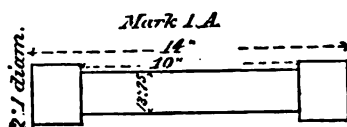
Sectional area, 1.5 square inches.

Gauged length, 10 inches.

Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
Pounds.		Inch.	Inch.	
0	0			
4,500	3,000	.0010	0.	
6,000	4,000	.0018	0.	
7,500	5,000	.0020	0.	
9,000	6,000	.0028	0.	
10,500	7,000	.0032	0.	
12,000	8,000	.0036	.0002	
13,500	9,000	.0046	.0002	
15,000	10,000	.0050	.0002	
16,500	11,000	.0056	.0002	
18,000	12,000	.0062	.0002	
19,500	13,000	.0066	.0002	
21,000	14,000	.0072	.0002	
22,500	15,000	.0080	.0006	
24,000	16,000	.0087	.0006	
25,500	17,000	.0092	.0006	
27,000	18,000	.0097	.0006	
28,500	19,000	.0102	.0006	
30,000	20,000	.0112	.0007	
31,500	21,000	.0117	.0010	
33,000	22,000	.0127	.0010	
34,500	23,000	.0132	.0012	
36,000	24,000	.0140	.0016	
37,500	25,000	.0147	.0017	
39,000	26,000	.0152	.0017	
40,500	27,000	.0162	.0022	
42,000	28,000	.0170	.0027	
43,500	29,000	.0180	.0030	
45,000	30,000	.0187	.0032	
48,000	32,000	.0210	.0042	
51,000	34,000	.0240	.0062	
54,000	36,000	.0280	.0092	
57,000	38,000	.0332	.0126	
60,000	40,000	.0406	.0192	

COMPRESSION OF GUN IRON FROM THE SOUTH BOSTON IRON COMPANY.

728.



Sectional area, 1.48 square inches.

Gauged length (taken between shoulders), 10 inches.

Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
Pounds.		Inch.	Inch.	
0	0			
1,480	1,000	.0007	0.	
2,960	2,000	.0015	.0003	
4,440	3,000	.0019	.0003 +	

Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
5,920	4,000	.0024	.0005	
7,400	5,000	.0029	.0006	
8,880	6,000	.0038	.0006	
10,360	7,000	.0040	.0006+	
11,840	8,000	.0047	.0007	
13,320	9,000	.0051	.0007	
14,800	10,000	.0058	.0007+	
16,280	11,000	.0064	.0008	
17,760	12,000	.0069	.0008	
19,240	13,000	.0076	.0008+	
20,720	14,000	.0081	.0009	
22,200	15,000	.0088	.0009	
23,680	16,000	.0095	.0009+	
25,160	17,000	.0100	.0010	
26,640	18,000	.0108	.0011	
28,120	19,000	.0114	.0013	
29,600	20,000	.0121	.0015	
31,080	21,000	.0129	.0017	
32,560	22,000	.0136	.0018	
34,040	23,000	.0145	.0019	
35,520	24,000	.0151	.0021	
37,000	25,000	.0159	.0024	
38,480	26,000	.0169	.0029	
39,960	27,000	.0180	.0033	
41,440	28,000	.0190	.0038	
42,920	29,000	.0204	.0045	
44,400	30,000	.0219	.0051	
45,880	31,000	.0235	.0063	
47,360	32,000	.0249	.0072	
48,840	33,000	.0269	.0085	
50,320	34,000	.0289	.0101	
51,800	35,000	.0318	.0124	
53,280	36,000	.0349	.0151	
54,760	37,000	.0389	.0186	
56,240	38,000	.0427	.0219	
57,720	39,000	.0473	.0259	
59,200	40,000	.0548	.0279	

Cast iron took slight bend; about .002 inch deflection at middle.

729.

Mark, 2 A.—Same form as 728.

Length gauged (between shoulders), 9.961 inches.

Diameter, 1.376 inches.

Sectional area, 1.48 square inches.

Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
0	0			
1,480	1,000	.0003	0.	
2,960	2,000	.0008	0.	
4,440	3,000	.0011	0.	
5,920	4,000	.0017	0.	
7,400	5,000	.0021	0.	
8,880	6,000	.0027	0.	
10,360	7,000	.0032	0.	
11,840	8,000	.0038	0.	
13,320	9,000	.0044	0.	
14,800	10,000	.0049	.0001	
16,280	11,000	.0054	.0001+	
17,760	12,000	.0059	.0002	
19,240	13,000	.0067	.0002+	
20,720	14,000	.0071	.0003	
22,200	15,000	.0078	.0004	
23,680	16,000	.0082	.0004	
25,160	17,000	.0088	.0004+	
26,640	18,000	.0093	.0005	

Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
28,120	19,000	.0099	.0006	
29,600	20,000	.0105	.0007	
31,080	21,000	.0110	.0007+	
32,560	22,000	.0116	.0008	
34,040	23,000	.0121	.0009	
35,520	24,000	.0127	.0009+	
37,000	25,000	.0132	.0010	
38,480	26,000	.0140	.0011+	
39,960	27,000	.0148	.0013	
41,440	28,000	.0152	.0015	
42,920	29,000	.0159	.0017	
44,400	30,000	.0167	.0019	
45,880	31,000	.0174	.0020	
47,360	32,000	.0180	.0021	
48,840	33,000	.0188	.0026	
50,320	34,000	.0197	.0029	
51,800	35,000	.0206	.0033	
53,280	36,000	.0215	.0039	
54,760	37,000	.0227	.0044	
56,240	38,000	.0236	.0049	
57,720	39,000	.0248	.0056	
59,200	40,000	.0266	.0067	

730.

Mark A. 3 block.—Same form as 728.

Gauged length (between shoulders), 9.995 inches.

Diameter, 1.355 inches.

Sectional area, 1.44 square inches.

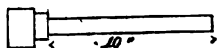
Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
0				
1,440	1,000	0. +	0.	
2,880	2,000	.0003	0.	
4,320	3,000	.0010	0.	
5,760	4,000	.0017	0.	
7,200	5,000	.0022	0.	
8,640	6,000	.0030	.0001	
10,080	7,000	.0034	.0001	
11,520	8,000	.0041	.0002	
12,960	9,000	.0049	.0002	
14,400	10,000	.0053	.0002	
15,840	11,000	.0060	.0002	
17,280	12,000	.0067	.0002+	
18,720	13,000	.0073	.0003	
20,160	14,000	.0081	.0004	
21,600	15,000	.0088	.0005	
23,040	16,000	.0094	.0006	
24,480	17,000	.0102	.0008	
25,920	18,000	.0110	.0010	
27,360	19,000	.0119	.0011	
28,800	20,000	.0126	.0012	
30,240	21,000	.0133	.0014	
31,680	22,000	.0142	.0020	
33,120	23,000	.0153	.0021	
34,560	24,000	.0163	.0026	
36,000	25,000	.0175	.0031	
37,440	26,000	.0186	.0037	
38,880	27,000	.0204	.0050	
40,320	28,000	.0219	.0057	
41,760	29,000	.0239	.0071	
43,200	30,000	.0260	.0088	
44,640	31,000	.0285	.0110	
46,080	32,000	.0316	.0133	
47,520	33,000	.0359	.0170	
48,960	34,000	.0418	.0221	
.....	10,000	.....	.....	Specimen began perceptible deflection at middle.

Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
0	20,000	0	.0219	Rested over night under no load.
10,000	10,000	.0051	.0219	
20,000	20,000	.0110	.0219	
30,000	30,000	.0172	.0220	
34,000	34,000	.0209	.0232	
50,460	25,000	.0245	.0263	Deflection at middle about .002 inch with load off.

COMPRESSION TEST OF SPECIMEN WHICH HAD PREVIOUSLY BEEN BROKEN BY TENSILE STRAIN.

731.

Mark B. 3 block



Sectional area (diameter, 1.33 inches), 1.5 square inches.

Fractured end cut off and specimen squared off 10 inches from shoulder.

Gauged length, from shoulder to compressor dies, 10 inches.

Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
1,500	1,000	0	0	Loads released to initial load of 1,000 pounds per square inch and set determined.
3,000	2,000	.0008	0	
6,000	1,000	.0021	0	
15,000	4,000	.0065	.0008	
22,500	1,000	.0131	.0041	
30,000	15,000	.0253	.0130	
45,000	1,000	.0313	.0313	
	20,000			
	1,000			
	30,000			

732.—SAME FORM AS 731.

B. 2.

After having been tested by tension cut off 10 inches from shoulder and compressed.

Sectional area (1.345 inches diameter), 1.42 square inches.

Gauged length, between shoulder and face of compression die, 10 inches.

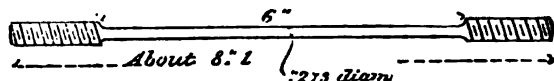
Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
1,420	1,000	0	0	
2,840	2,000	.0009	.0002	
5,680	1,000	.0021	.0003	
	4,000			
	1,000			

Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
8,520	6,000	.0036	.0005	
14,200	10,000	.0063	Ab't. 0007	
21,300	15,000	.0106	.0019	
28,400	20,000	.0191	.0059	
42,600	30,000	.0310	.0140	
	1,000			

TENSILE TESTS OF WROUGHT-IRON SPECIMENS MILLED OUT AND TURNED DOWN FROM A CLAMP-DOG [—————], WHICH WAS USED IN THE FOUNDATIONS OF THE OBELISK BROUGHT TO NEW YORK BY LIEUTENANT COMMANDER GORRINGE.

958.

Form of specimens.



Sectional area, .0585 square inch.
Gauged length, 5.14 inches.

Loads.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
292	5,000			
468	8,000	.0004		
585	10,000	.0006		
	5,000		+.0001	
702	12,000	.0010		
877	15,000	.0016		
	5,000		.0001	
1,053	18,000	.0024		
1,170	20,000	.0029		
	5,000		.0001	
1,228	21,000	.0030		
1,287	22,000	.0034		
1,345	23,000	.0035		
1,404	24,000	.0036		
1,462	25,000	.0039		
1,521	26,000	.0040		
1,579	27,000	.0042		
1,638	28,000	.0044		
1,696	29,000	.0047		
1,755	30,000	.0049		
	5,000		.0004	
1,813	31,000	.0054		
1,872	32,000	.0059		
1,930	33,000	.0062		
1,989	34,000	.0064		
2,047	35,000	.0066		Elastic limit.
2,106	36,000	.0070		Yielding continued while under strain.
2,164	37,000	.0099		Yielding continued.
2,223	38,000	.0170		Yielding continued.
2,340	40,000	.0550		Ultimate strength = 14.2 per cent.
3,190	54,530			
0		.73		

Diameter at fracture, .18 inch.

Area, .0254 square inch.

Contraction of area, 56.6 per cent.

Appearance of fracture, granular. Small seam at point of fracture.

959.

Diameter, .274 inch.

Sectional area, .059 square inch.

Gauged length, 5.1 inches.

Loads.	Pounds per square inch.	Elongation.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
295	5, 000			Elastic limit.
590	10, 000	.0010		
885	15, 000	.0022		
1, 180	20, 000	.0030		
1, 475	25, 000	.0040		
1, 770	30, 000	.0055		
	5, 000		.0012	
1, 829	31, 000	.0062		Ultimate strength=10.4 per cent.
1, 888	32, 000	.0075		
1, 947	33, 000	.0086		
2, 006	34, 000	.0260		
2, 065	35, 000	.0400		
2, 780	47, 120			
0	0	.54		

Diameter at fracture, about .20 inch.

Area, .0314 square inch.

Contraction of area, 46.8 per cent.

Fracture slightly fibrous in appearance; the fracture took place at some deep seams in the metal.

COMPRESSION OF COPPER PRESSURE PLUGS.

1022.

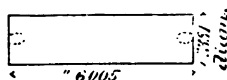
Diameter about .3 inch.

3,120 pounds required to shorten plug to .542 inch, corresponding to 6-ounce powder charge in experimental cylinder.

4,020 pounds required to shorten plug to .472 inch, corresponding to 8-ounce powder charge in experimental cylinder.

PRESSURES TO COMPARE WITH PLUG IN LINED CYLINDER.

1057.



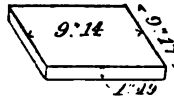
Loads ap- plied.	Length of plug.	Remarks.
<i>Pounds.</i>	<i>Inch.</i>	
4, 770	.493	Equal to length of 3-ounce plug.
4, 860	.484	Equal to length of 4-ounce plug.
5, 520	.447	Equal to length of 8-ounce plug.
	.446	Equal to length of 6-ounce plug.
5, 940	.4275	Equal to length of 10-ounce plug.

While under the first load the plug compressed obliquely, and so continued. The loads recorded were sustained when the average length of plug was according to the second column.

CONDENSATION OF BRONZE PLATES.

373.

Condensed with 30,000 pounds per square inch.



First plate.

Planned on one face.

Dimensions after condensation, $9''.2 \times 9''.2 \times 1''.44$.

Second plate.—Unfinished.

Dimensions before condensation, $9''.13 \times 9''.11 \times 1''.5$.Dimensions after condensation, $9''.20 \times 9''.15 \times 1''.48$.

Third plate.—Undressed.

Dimensions before condensation, $8''.97 \times 8''.06 \times 1''.55$.Dimensions after condensation, $8''.99 \times 8''.06 \times 1''.55$.

Fourth plate.—Undressed.

Dimensions before condensation, $9''.02 \times 9''.05 \times 1''.56$.Dimensions after condensation, $9''.03 \times 9''.06 \times 1''.56$.

The above plates being undressed, just as taken from the sand, the measurements necessarily are only approximate.

TENSILE TESTS OF WIRE ROPE FOR WASHINGTON MONUMENT

286.

Six strands, with hemp center.

Length inside cast-iron heads, 10 feet.

Diameter, $1.62\frac{1}{2}$ inches.

Circumference, 5.1 inches.

Ultimate strength, 158,300 pounds.

Broke two strands close by head.

Frequent snapping sound after 142,000 pounds had been passed. Attributed to drawing in heads, as no broken wires were observed.

287.

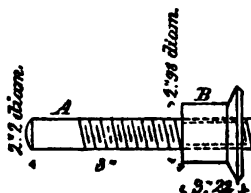
Same length and diameter as 286.

Ultimate strength, 150,000 pounds.

Broke one strand at head.

SHEARING STRENGTH OF SQUARE THREAD IN BRASS NUT.

715.



A. Wrought-iron screw, square thread, $1\frac{1}{2}$ threads per inch.
Depth of thread, $\frac{1}{4}$ inch.

B. Yellow brass nut. Width of thread, .27 inch. Width of space, .33 inch.

Slot in screw, .32 inch wide, cutting away thread.

Nut rests against face of steel dies having hole $1\frac{1}{4}$ inches in diameter to receive end of wrought-iron screw.

Shearing area in nut (no deduction for slot in screw), 10 square inches.

Loads applied.	
Pounds.	
7,500	
15,000	
20,000	
30,000	
125,000	

Buckled screw.

Cut-off screw in lathe now projects $2\frac{1}{2}$ inches beyond face of nut.

187,000 = 18,700 pounds per inch = ultimate strength.

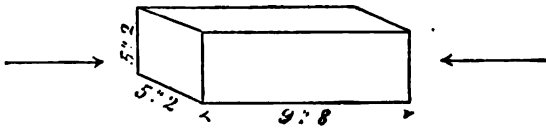
Sheared, both wrought iron and brass threads.

Shearing area of wrought-iron screw, 1.7 inches diameter = 7.73 square inches.

Therefore ultimate shearing strength = 24,200 pounds per square inch.

COMPRESSION OF SERPENTINE FROM THE QUARRY OF THE VERD-ANTIQUE MARBLE COMPANY, LYNNFIELD, MASS.

683.



Ends dressed in lathe.

Sectional area, 27 square inches.

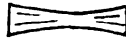
Loaded parallel with grain.

Gaugings taken between steel compression plates.

Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
Pounds.		Inch.	Inch.	
27,000	1,000	Amount of compression and set measured for full length, 9.8 inches.
54,000	2,000	.0025	.0005	
67,500	1,000	.....	.0017 (?)
	2,500	.0035	.....
81,000	1,000	.....	.0008
	3,000	.0046	.....
94,500	1,000	.....	.0010
	3,500	.0057	.....
108,000	1,000	.....	.0011
	4,000	.0068	.....
121,500	1,000	.....	.0013
	4,500	.0078	.....
135,000	1,0000016	
	5,000	.0089	
148,500	1,0000104	
	5,500	.0104	

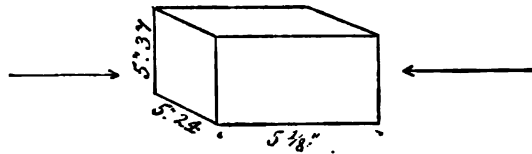
Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
	1,000	.....	.0017	
162,000	6,000	.0115	.....
	1,000	.....	.0020	
175,500	6,500	.0127	.....
	1,000	.....	.0023	
189,000	7,000	.0139	.....
	1,000	.....	.0025	
202,500	7,500	.0155	.....
	1,000	.....	.0028	
216,000	8,000	.....	.....	Opened crack at 215,000 pounds.
221,000	8,190	.....	.....	Ultimate strength.

Broke into wedge-shaped fragments, sides flying off and leaving the pieces in the machine shaped like sketch.



SERPENTINE. FROM SAME QUARRY.

699.



Sectional area, 23.1 square inches.

Ends dressed in lathe.

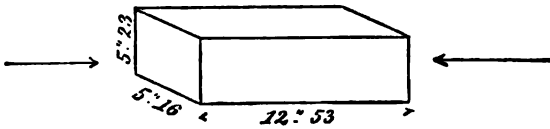
Loads applied perpendicularly to grain of stone.

Stone not free from closed seams.

Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
28,100	1,000	Gaugings taken between faces of steel compression dies.
56,200	2,000	.0012	.....
	1,000	.....	0.
84,300	3,000	.0020	.....
	1,000	.....	0.
112,400	4,000	.0028	.....
	1,000	.....	0.
140,500	5,000	.0042	.....
	1,000	.....	.0002
168,600	6,000	.0056	.....
	1,0000004	
196,700	7,000	.0073	.....
	1,000	.....	.0007
224,800	8,000	.0090	.....
	1,000	.....	.0009
252,900	9,000	.0109	.....
	1,000	.....	.0011
281,000	10,000	.0126	.....
	1,000	.....	.0014
307,500	Crack opened along edges.
311,000	11,070	Ultimate strength.

COMPRESSIVE TEST OF SUTHERLAND FALLS MARBLE.

684.



Sectional area, 27 square inches.

Compression gaugings taken between steel compression dies.

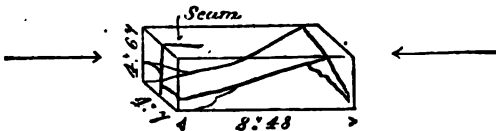
Ends dressed in lathe, came to good bearing, requiring no packing.

Loads applied.	Pounds per square inch.	Compression.	Set.	Remarks.
<i>Pounds.</i>		<i>Inch.</i>	<i>Inch.</i>	
27,000	1,000			
54,000	2,000	.0022		
	1,000		.0002	
67,500	2,500	.0033		
	1,000		.0003	
81,000	3,000	.0043		
	1,000		.0008	
94,500	3,500	.0052		
	1,000		.0009	
108,000	4,000	.0061		
	1,000		.0010	
135,000	5,000	.0080		
	1,000		.0011	
162,000	6,000	.0096		
	1,000		.0012	
189,000	7,000	.0112		
	1,000		.0015	
216,000	8,000	.0130		
	1,000		.0019	
243,000	9,000	.0150		
	1,000		.0022	
270,000	10,000	.0170		
	1,000		.0029	
297,000	11,000	.0197		
	1,000		.0031	
323,400	12,163			Ultimate strength.

COMPRESSION OF VERD-ANTIQUE MARBLE (SERPENTINE).

579.

Marble quarried about one year.

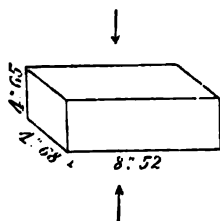


Sectional area, 21.94 square inches.

Strain applied parallel with grain of stone.

Loads applied.	Remarks.
<i>Pounds.</i>	
174,000	Slight sound.
175,500	Piece chipped off side.
186,400	Ultimate strength = 8,496 pounds per square inch.

580.



Sectional area, $8''.52 \times 4''.68 = 39.87$ square inches.
Strain applied at right angles with grain of stone.

Loads applied.	Remarks.
<i>Pounds.</i> 502, 300	Ultimate strength = 12,578 pounds per square inch.

Fractured suddenly into small fragments.
Compression faces dressed in lathe.

CONCRETE CUBES.

Size of cube.	Mark.	Weight per cubic foot.	Remarks.
<i>Inches.</i>		<i>Pounds.</i>	
12	A.	145	The weight here given was taken when the cubes were broken.
12	B.	148.33	
12	C.	151.83	
12	D.	151.83	Tested with pine cushions, same square as concrete blocks, each $\frac{1}{4}$ inch thick, one on each side of block next to compression platform.
8	E.	152.764	
6	F.	.....
6	G.	.....

CUBE A.

Weight, 145 $\frac{1}{2}$ pounds.

First crack on face of cube appeared under load of 264,800 pounds.

Ultimate load, 309,700 pounds.

One side of this cube was $\frac{1}{10}$ inch thicker than the other. The thicker side gave way first.

CUBE B.

Weight, 143 pounds.

First crack, 260,600 pounds.

Ultimate load, 303,800 pounds.

CUBE C.

Weight, 149 pounds.

First crack, 254,100 pounds.

Ultimate strength, 283,400 pounds.

CUBE D.

Weight, 150½ pounds.

First crack, 267,000 pounds.

Ultimate load, 299,100 pounds.

CUBE E.

First crack, 105,300 pounds.

Ultimate strength, 122,000 pounds.

CUBE F.

First crack, 65,800 pounds.

Ultimate strength, 77,900 pounds.

CUBE G.

Longitudinal cracks at 55,000 pounds.

Pressure run down to 45,000 pounds. This pressure sustained about 5 m., cracks gradually opening.

21,000 pounds sustained, when block and boards together were compressed to 6 inches thickness.

Sides of block flaking off.

Block crumbled rapidly, running pressure down to 8,000 pounds.

Statement of disbursements under appropriation, "Testing machine, 1881."

Disbursed.	Amount.
For bronze nuts.....	\$962 84
For fixtures, etc., for testing I beams.....	991 44
For testing cylinders.....	214 33
For alteration of machine and repair of boiler.....	487 05
For adjusting cranes, hand rails, platforms, etc.....	309 49
For strengthening frame of accumulator.....	21 15
For fixtures for use in testing-room.....	108 78
For tools for use in testing-room.....	19 40
For dies for use in testing-room.....	1,992 12
For power and heating.....	1,051 09
For oil, waste, and packings.....	129 83
For angle and double refined iron for tests.....	149 92
For iron and steel pins for tests.....	118 70
For wrought-iron columns for tests.....	1,565 51
For preservation of wood for tests.....	37 25
For labor preparing specimens for tests.....	238 06
For freight on specimens for tests.....	228 75
For operating machine (3 men).....	2,100 37
	\$10,726 68
AMOUNT DUE ON MATERIALS, ETC., CONTRACTED FOR.	
For fixtures for pump.....	14 00
For instrument for measuring elongation.....	300 00
For hard-pine plank and timber for tests.....	731 23
For white-pine timber for tests.....	899 31
For wrought-iron and steel boiler plates for tests.....	451 00
For wrought-iron columns for tests.....	1,877 78
	4,273 32
Total.....	15,000 00

T. T. S. LAIDLEY,
Colonel of Ordnance, Commanding.

